DOCUMENT RESUME

ED 197 057 CE 027 070

AUTHOR Wesson, Carl E.
TITLE Task Analysis Inventories. Series II.
INSTITUTION Employment and Training Administration (DOL), Washington, D.C.
PUB DATE 80
NOTE 229p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adults; Aerospace Industry; Anthropology; Aviation Technology; Building Trades; Cabinetmaking; Check Lists; Chemical Industry; Chemical Technicians; Economics; Educational Background; Electrical Occupations; Food Processing Occupations; Forestry Occupations; History; Instrumentation; Instrumentation Technicians; *Job Analysis; *Job Skills; Libraries; Library Personnel; Lumber Industry; Manufacturing; *Occupational Information; Petroleum Industry; Plastics; Political Science; Repair; Social Sciences; Sociology; *Task Analysis; Woodworking
IDENTIFIERS Boats; Paper and Pulp Occupations; Shipbuilding Industry; Textile Industry

ABSTRACT

This second in a series of task analysis inventories contains checklists of work performed in twenty-two occupations. Each inventory is a comprehensive list of work activities, responsibilities, educational courses, machines, tools, equipment, and work aids used and the products produced or services rendered in a designated occupational area. The inventories can be used to set up work programs, write job descriptions, or be given to workers to check appropriate items in a self-inventory of their work. The information collected by use of the inventories may be helpful to job developers, counselors, and training and placement personnel. It also may be used in the development of curriculums for vocational or apprenticeship training. Occupations covered in this inventory series include aircraft and aerospace manufacturing; building and construction trades; chemical processing; economics and political science work; electrical equipment, apparatus, and devices manufacturing; electronic components, equipment, and apparatus manufacturing; plastics manufacturing; food processing; history, sociology, and anthropology work; instruments and apparatus manufacturing; knitting mill work; library work; logging; paper and paperboard converting; petroleum refining; sawmill and planning mill work; ship and boat building and repairing; textile mill work; veneer and plywood mill work; woodworking. (KC)

Task Analysis Inventories, Series II

U.S. Department of Labor
Ray Marshall, Secretary

Employment and Training Administration
Ernest G. Green
Assistant Secretary for Employment and Training
1980

Preface

This is the second of a series of task analysis inventories, the first of which was printed in 1973.[1] The inventories are adaptations of the Job Information Matrix System (JIMS) developed during research conducted under contract with the Department of Labor and directed by Dr. Dale Yoder of the Bureau of Business Research at the Long Beach State University, Long Beach, and Dr. C. Harold Stone of the California State University, Los Angeles. The primary objective of the research was to investigate and determine the cost and effectiveness of various techniques and procedures of collecting job analysis data. As a result, JIMS has as a nucleus an organization of standardized tasks found in a particular activity or area of work.

Manpower program staffers have used Series I for purposes such as identifying tasks, developing jobs, and preparing job descriptions; providing information to counselees and trainees on specific tasks associated with different kinds of work; and developing training programs fostering entrance into fields of work that offer maximum employment opportunities.

Task Analysis Inventories was produced by the U.S. Employment Service, Division of Occupational Analysis. Adaline Padgett of the Division provided planning and technical coordination. Carl E. Wesson, Occupational Analyst, California Occupational Field Center (J. Edmond Phillips, Supervisor), drafted the document.

[1] *Task Analysis Inventories* (Washington: U.S. Department of Labor, Manpower Administration, 1972).

Contents

Introduction

USES OF INVENTORIES

The inventories provide a tool for identifying significant tasks and worker requirements. Data were obtained from job analysis studies, currently published occupational literature, professional associations, trade unions, and public and private sector organizations and establishments. The inventory is a comprehensive list of work activities, responsibilities, educational courses, machines, tools, equipment, and work aids used and the products produced or services rendered in a designated area. The user, after considering all of the items listed can determine those that are applicable. This is the second in a series of inventories to be developed for designated areas in the economy. Additional inventories will be developed and published in the future.

The inventories can be adapted to meet the various needs of work programs. For example, the user may become familiar with the lists of tasks in advance of a study then use the items as a guide to interviewing workers, supervisors, personnel management staff, or others from whom the user is obtaining job information. In some cases, the inventories may be given to workers to check appropriate items in a self-inventory of the work they perform.

The information resulting from use of the inventories may have relevance in activities other than basic job analysis. The inventories offer a quick method for preparation of job descriptions or assessing the need for, or feasibility of, job restructuring without undertaking detailed job analysis studies. If restructuring is performed, the items from the list may then serve as the framework for task identification and analysis, the basis for job restructuring.

Information collected from both the lists of tasks (activities) and the lists of machines, tools, equipment and work aids can be used to determine abilities and knowledges required for a specific job, which must be considered in the development of curriculums for vocational or apprenticeship training.

The categories relating to educational requirements and courses that would develop workers' skills for performing the job duties, licensing requirements, and other similar information will be of assistance to counselors, job developers, training, and placement personnel.

For the lists to reflect complete information about the job, the users should always be encouraged to write in additional tasks or other pertinent items. Users should also be cautioned to analyze jobs as they exist and not attempt to make them fit the items.

ARRANGEMENT OF THE INVENTORIES

The task statements are not limited to any level of performance and may include activities that range from high-level supervision to elementary work. Some types of work exist in many fields of endeavor. Separate inventories have been prepared to represent these universal tasks (activities), such as "Administrative and Management" and "Clerical" (series I). In addition, many professional disciplines, such as Engineers, Economists, Mathematicians, and Scientists are utilized in both the public and private sectors. TASK ANALYSIS INVENTORIES have been, or are being, prepared for these disciplines such as "ARCHITECTURAL AND ENGINEERING WORK" (series I), "MATHEMATICS AND PHYSICAL SCIENCES WORK" (series I) and "PSYCHOLOGICAL RESEARCH."

The tasks, as well as additional items on the lists, are not arranged in alphabetical or chronological order, so the user will need to read and consider all the items.

Procedures for Completing Inventory Items

Step 1. Select the task inventory which is pertinent to the job being studied.

Step 2. Prepare a copy of each of the pages for the appropriate area of work.

Step 3. Indicate in the upper right hand corner of the first page of the selected inventory the title(s) by which the job is commonly known.

Step 4. Read each of the items listed on the inventory.

Step 5. Indicate by an "X" in the box on the right of the line for each item, those that are pertinent to the job being studied.

Step 6. Write in additional items or tasks found in the job but not listed in the inventory.

The items checked on the inventory may be used to provide the basis for preparation of a job description, in which case it may be desirable to code the job according to the classification structure contained in the *Dictionary of Occupational Titles*[2] developed by the U.S. Employment Service. Procedures for this purpose will be found on pages 27 and 28 of the *Handbook for Analyzing Jobs*, under the heading Procedure for Assigning and Recording Code.

In studying some jobs, the user may refer to more than one inventory. For example, a job in department store management may require reference items in two inventory lists — "Merchandising Work" and "Administrative and Management Work."

Among the inventory categories, union affiliation information is not consistently supplied.

[2] *Dictionary of Occupational Titles* (4th ed.; Washington: U.S. Department of Labor, Employment and Training Administration, 1977).

AIRCRAFT AND AEROSPACE MANUFACTURING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Supervises, and coordinates activities of, workers engaged in:
- Performing overall craftsmanship work to aid in developing and proving engineering design on prototype aero-astro products ☐
- Laying out and fabricating tooling for use in:
  - Producing of fabricated parts for product ☐
  - Bench assembly operations ☐
  - Final assembly operations ☐
- Machine fabrication or product or system parts ☐
- Hand fabrication or rework of product or system parts ☐
- Bench assembly or parts into units or subassemblies ☐
- Structural assembly of product ☐
- Installation of a specific system in product ☐
- Installation of propulsion power plant ☐
- Installation of power plant auxiliaries ☐
- Inspection of structural assemblies ☐
- Inspection and checkout of product or installed systems ☐
- Testing of materials and structural assemblies ☐
- Other (specify) ☐

Plans:
- Manpower requirements ☐
- Machine requirements ☐
- Material requirements ☐
- Tooling requirements ☐
- Other (specify) ☐

Prepares work and worker schedules ☐
Assigns workers to specific duties ☐
Gives work directions to workers concerning assigned duties ☐
Interprets specifications, work orders, and technical data for workers ☐
Advises workers on methods and procedures for solving work problems ☐
Reviews inspection and test reports on materials, assemblies, or products ☐
Coordinates work activities with those of other departments ☐
Enforces worker compliance with established procedures, regulations, and safety rules ☐
Requisitions materials, tooling, and equipment ☐
Requests repair or maintenance on tooling and machinery ☐

Trains workers in:
- Machine and equipment setup and operation ☐
- Bench assembly operations ☐
- Structural and final assembly operations ☐
- Installation of systems and system components ☐
- Inspection and checkout of systems ☐

- Inspection and final checkout of finished product ☐
- Evaluates worker performance ☐
- Initiates personnel actions, such as promotions, discharges, or disciplinary actions ☐
- Resolves employee grievances or submits them to higher authority ☐
- Other (specify) ☐

Reads or reviews:
- Engineering drawings ☐
- Design modification change sheets ☐
- Material processing orders ☐
- Tooling specifications ☐
- Tooling requirements ☐
- Fabricating specifications ☐
- Fabricating schedules ☐
- Bench assembly specifications ☐
- Bench assembly schedules and procedures ☐
- Structural assembly specifications ☐
- Structural assembly procedures ☐
- System installation specifications ☐
- Inspection specifications and procedures ☐
- Test specifications and operational checkout procedures ☐
- Other (specify) ☐

Lays out:
- Structural parts of product on lofting floor ☐
- Reference points and lines on material ☐
- Contour and angle requirements ☐
- Fabricating data on part ☐
- Patterns, templates, or design on material ☐
- System and plans for installation in product structure ☐
- Other (specify) ☐

Constructs or makes:
- Tooling required for fabrication and assembly operations ☐
- Wooden mock-up of prototype products ☐
- Patterns and templates for laying out, fabricating, or checking measurements of parts ☐
- Fixtures, jigs, and holding devices required for assembly activities ☐
- Models for testing aerodynamics of product ☐
- Forms for producing fabricating dies ☐
- Other (specify) ☐

- Sets up machines for operation by other workers ☐
- Sets up and operates metal working machines ☐
- Controls operation of automated machines ☐
- Controls equipment to process materials ☐
- Tends preset-up automatic machines ☐
- Operates preset-up machines ☐
- Assists worker to operate machine or equipment ☐
- Other (specify) ☐

Installs, aligns, and secures:
- Forming rolls ☐
- Stops ☐
- Guides ☐
- Fixtures ☐
- Cams ☐
- Gears ☐
- Shear blades ☐
- Saw blades ☐
- Machine attachments ☐
- Duplicating machine attachments ☐
- Tools in toolholders or machine heads ☐
- Workpiece in fixture, jig, holding device, or machine ☐
- Other (specify) ☐

Moves machine or equipment controls to:
- Start or stop operations ☐
- Set temperature, pressure, or time cycle specified ☐
- Set length of stroke on hydraulic ram ☐
- Feed tool or die onto workpiece ☐
- Adjust machine or equipment operations ☐
- Reset machine guides, stops, or roll clearances ☐
- Hoist, move, or position workpiece, die, or tooling ☐
- Other (specify) ☐

Monitors:
- Operation of machine from control console ☐
- Panelboard gages and meters for specified machine or equipment operation ☐
- Functional operation of machines ☐
- Machine operations controlled by on-line computer, numerical control, or tape ☐
- Closed circuit television receiver showing machine operations ☐
- Other (specify) ☐

- Examines part for defects in fabrication or manufacture ☐
- Measures parts for conformance with dimensional specifications ☐
- Hand fabricates parts, using hand and power tools and work aids ☐

Handworks parts to specifications by:
- Filing ☐
- Scraping ☐
- Grinding ☐
- Chipping ☐
- Truing ☐
- Straightening ☐
- Lapping ☐
- Honing ☐
- Bending ☐
- Bumping ☐
- Planishing ☐
- Polishing ☐

- Buffing ☐
- Other (specify) ☐

Assembles:
- Components of system equipment in units or subassemblies ☐
- Fabricated sections of:
  - Air frame ☐
  - Fuselage ☐
  - Tail structure ☐
  - Rocket or missile housing ☐
  - Space craft module ☐
- Structural sections of product into complete product structure ☐
- Other (specify) ☐

Positions parts, materials, or housing unit in:
- Holding device, fixture, or jig ☐
- Specified relationship to other parts or material ☐
- Specified alinement with other parts ☐
- Other (specify) ☐

Verifies that parts or material meet specifications for:
- Fit ☐
- Alinement ☐
- Tolerances and clearances ☐
- Freedom of movement ☐
- Tension between parts ☐
- Contour and angle of material ☐
- Other (specify) ☐

Secures parts or materials together during assembly using:
- Screws ☐
- Pins ☐
- Dowels ☐
- Solder ☐
- Bolts and nuts ☐
- Bonding agents ☐
- Cement ☐
- Cotter Keys ☐
- Rivets ☐
- Keyway press ☐
- Laminating press ☐
- Welds:
  - Flash welds ☐
  - Spot welds ☐
  - Bead welds ☐
  - Seam welds ☐
- Other (specify) ☐

Installs:
- System units in structure ☐
- System hardware, connectors, and auxiliaries ☐
- System instrumentation ☐
- Furnishings in interior of structure ☐
- Other (specify) ☐

Inspects:
- Materials ☐
- Fabricated or machined parts ☐
- Subassemblies ☐
- Structures ☐
- Systems ☐
- Products ☐
- Other (specify) ☐

Insures that inspected items meet specifications for:
- Quality workmanship ☐
- Assembly ☐
- Installation ☐
- Conformance with regulatory agency directives ☐
- Completeness and accuracy ☐
- Fit and relationship of parts ☐
- Conformance with engineering design and changes ☐
- Ease and freedom of movement of parts ☐
- Other (specify) ☐

Measures material, parts, or assemblies for specified:
- Dimensional specifications, such as:
  - Width ☐
  - Length ☐
  - Height ☐
  - Thickness ☐
  - Radii ☐
- Flatness ☐
- Alinement ☐
- Tolerances and clearances ☐
- Shape and contour of material ☐
- Coating thickness ☐
- Other (specify) ☐

Tests:
- Materials for conformance with physical characteristic specifications ☐
- Parts or structures for internal defects, structural flaws, or material fatigue ☐
- Subassemblies or system units for specified functional performance ☐
- System installations for conformance with operational standards ☐
- Instrument readings on systems with testing equipment readings ☐
- Installed systems under simulated operating conditions ☐
- Product under simulated flight conditions for specified performance ☐
- Other (specify) ☐

Rejects or orders rework for items with:
- Faulty workmanship ☐
- Coating imperfections ☐
- Surface defects ☐
- Manufacturing defects ☐
- Assembly defects ☐
- Faulty installation ☐
- Damaged parts ☐
- Missing parts ☐
- Loose or faulty connections ☐
- Structural or internal flaws ☐
- Malfunctioning parts ☐
- Electrical characteristics not meeting standards ☐
- System operational malfunctions ☐
- Assembly functional malfunctions ☐
- Other (specify) ☐

Analyzes test or inspection findings to determine rejection cause ☐

Prepares rework order for rejected:
- Fabricated materials ☐
- Machined parts ☐
- Assemblies or units of systems ☐
- Structural assemblies ☐
- System installations ☐
- Product structure ☐
- Other (specify) ☐

Prepares acceptance reports for:
- Materials meeting specified physical characteristics ☐
- Vendor supplied parts meeting specifications ☐
- Assembled units or subassemblies meeting functional specifications ☐
- Installed system that meets operational standards ☐
- Finished products meeting operating performance standards ☐
- Other (specify) ☐

Calibrates system instrumentation and control readings with standards approved by American Society for Testing and Measurement ☐

Resets controls, setscrews, or devices on assemblies to obtain specified functional performance ☐

Disassembles system units or assemblies to locate cause of malfunction or defective part ☐

Resets clearances or frees moving parts that are binding ☐

Removes malfunctioning part of assembly or instrument ☐

Replaces part and reassembles unit or instrument ☐

Tests unit or assembly for functional performance ☐

Installs unit, assembly, or instrument in system and retests system ☐

Removes defective structural parts from structure or structural assembly ☐

Replaces structural material or fabricates part, using tooling or piece removed as template ☐

Positions and secures part in place with rivets or by welds ☐

Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Government Personnel ☐
- Engineering Personnel ☐
- Liaison Personnel ☐
- Laboratory Personnel ☐
- Inspection Personnel ☐
- Department Heads ☐
- Supervisors ☐
- Other Supervisors ☐
- Testing Personnel ☐
- Workers ☐
- Helpers ☐
- Apprentices ☐
- Military Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical School ☐
- Vocational School ☐
- Apprenticeship (see listing) ☐

EDUCATION AND TRAINING—Continued

- Military Training ☐
- On-the-job Training ☐
- Other (specify) ☐

LICENSURE, CERTIFICATE, ETC.

Record an "X" to indicate license requirements.

FAA:
- Airframe and Power Plant Certificate ☐
- Airframe Certificate ☐
- Power Plant Certificate ☐

FCC:
- Radiotelephone and Telegraph First Class License ☐
- Radiotelephone, First Class License ☐
- Radiotelephone, Second Class License ☐
- Other (specify) ☐

APPRENTICESHIP

Record an "X" to indicate apprenticeship.

- Airframe and Powerplant Mechanic ☐
- Airframe Mechanic ☐
- Power Plant Mechanic ☐
- Flight Line Mechanic ☐
- Aircraft Electrician ☐
- Aircraft Electronic Technician ☐
- E/E Development Mechanic ☐
- Jig and Fixture Builder ☐
- Makeup/Tooling Development Mechanic ☐
- Maintenance Electronic Technician ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop skills for occupation.

Craft Related Subjects and Courses:
- Practical Arithmetic ☐
- Shop Mathematics ☐
- Plane Geometry ☐
- Machine Tool Mathematics ☐
- Basic Algebra ☐
- Basic Trigonometry ☐
- Analytic Geometry ☐
- Shop Trigonometry ☐
- Introductory Calculus ☐
- Mechanical Drawing ☐
- Technical Drawing ☐
- Elements of Blueprint Reading ☐
- Blueprint Reading ☐
- Applied Science ☐
- Applied Chemistry ☐
- Applied Physics ☐
- Principles of Hydraulics ☐
- Principles of Pneumatics ☐
- Mechanical Principles ☐
- Principles of Tool Design and Engineering ☐
- Heat Energy and Machines ☐
- Materials and Processes ☐
- Heat Treating ☐
- Strength of Materials ☐
- Adhesives Bonding and Composites ☐
- Metal Bonding ☐
- Laminating Processes ☐
- Systems Familiarization ☐
- Care and Use of Measuring Instruments ☐
- Care and Use of Tools ☐
- Basic Electrical and Electronic Fundamentals: ☐
  - Structure of Matter and Static Electricity ☐
  - Ohm's Law ☐
  - Magnetism and Electrical Energy ☐
  - Electro-magnetism and Relays ☐
  - Induction and Transformers ☐
  - Capacitance ☐
  - Capacitive Reactance ☐
  - Inductance and Inductive Reactance ☐
  - Resonant Circuits ☐
  - Light Energy ☐
  - Sound Energy ☐
  - Oscillators ☐
  - Basic Transistors ☐

- Vacuum Tubes ☐
- Basic Communications Fundamentals:
  - Evolution of Communications ☐
  - Electronic Regulated Power Supplies ☐
  - Electromechanic Plate Supplies ☐
  - Audio Amplifiers Theory and Testing ☐
  - Audio Applications ☐
  - Transmitter Theory and Oscillators ☐
  - Buffers and Frequency Multipliers ☐
  - Power Amplifiers ☐
  - Modulation Methods ☐
  - Amplitude Modulators ☐
  - Practical Transmitter Theory ☐
  - Antenna Fundamentals ☐
  - Receiver Testing ☐
  - Receiver Testing and Servicing ☐
- Basic Navigation Fundamentals:
  - Introduction to Navigational Aids ☐
  - Radio Range, Markers, ILS ☐
  - Special Modulators and Detectors ☐
  - Pulse Modulation, Reception, Counting ☐
  - Filters and Phase Shifters ☐
  - Integrators and Differentiators ☐
  - Position Data Transmission ☐
  - Control Transformers, Differentials, Resolvers ☐
  - ADF Receivers, Loop and Sense Theory ☐
  - Thyratron Control Systems ☐
  - Loran ☐
  - Electronic Altimeters ☐
  - Omni Range Receivers ☐
- Automatic Control Systems Fundamentals:
  - Introduction to Automatic Control Systems ☐
  - Actuators ☐
  - Sensing, Transducing, Data Transmitting ☐
  - Control Circuits ☐
  - Stabilization ☐
- Radar System Fundamentals:
  - Introduction to Radar ☐
  - Radar Component Functions ☐
  - Special Circuits ☐
  - Power Supplies and Protection Devices ☐
  - High Power Hi-Frequency Modulators ☐
  - Magnetrons and Antennae ☐
  - Klystrons and AFC ☐
  - Receiver Special Circuits ☐
  - Special Video Circuits ☐
  - Display Stabilization ☐
  - Antenna Stabilization ☐
  - Radar Test Equipment ☐
  - Functionally Testing Radar ☐
- Computer Basic Fundamentals:
  - Binary Number System ☐
  - Binary Arithmetic ☐
  - Logic Design Techniques ☐
  - Boolean Algebra ☐
  - Computer Concepts:
    - Digital ☐
    - Analog ☐
  - Scale Factors, Constants, Calibration ☐
  - Computer Calibration and Testing ☐
  - Basic Computing Elements:
    - Division-Multiplication ☐
    - Addition-Division-Trigonometry ☐
    - Functions-Integration-Differentiation ☐
    - Rating Gyros ☐
    - Accelerometers ☐
    - Transducers ☐
    - Function Generators ☐
    - Ball-disc Integrators ☐
  - Basic Computing Circuits:
    - Amplifiers ☐
    - Summing-Integrating ☐
    - Feedback-Choppers-Multiplication by Variables ☐
  - Simple Computers:
    - Every Application ☐
    - Electronic Applications ☐
  - Advanced Computers:
    - Distance ☐
    - Rate ☐
    - Time ☐
    - Navigation ☐
    - Fire Control ☐
  - Other (specify) ☐

- Printed Circuit Boards and Manufacture:
  - Introduction ☐
  - Design ☐
  - Documentation ☐
  - Tooling and Machining ☐
  - Plating and Etching ☐
  - Fabrication of Plated Through Holes ☐
  - Fabrication of Multilayer Boards ☐
  - Fabrication of Flat Conductors ☐
  - Component Installation ☐
  - Quality Assurance ☐
  - Other (specify) ☐

Basic Optical Tooling:
- Function of Optical Tooling ☐
- Fundamental Optics ☐
- Levels ☐
- Transits ☐
- Telescopes ☐
- Laser and Hydraulic Positioner ☐
- Tool Fabrication and Routine Procedure ☐
- Other (specify) ☐

Electrical-Electronic Measurement:
- Basics ☐
- Introduction ☐
- Thevenins Theory ☐
- Thevenins to Wheatstone Bridge ☐
- Wheatstone Bridge ☐
- Characteristics of Standard Resistors ☐
- Kelvin Bridge ☐
- Megohm Bridge ☐
- Characteristics of Standard Cells ☐
- Loop Analysis ☐
- Nodal Analysis ☐
- Y Transformation ☐
- Algebra and Determinants ☐
- DC/AC Transfer Standards ☐
- AC/DC Calibration and Transfer Standard ☐
- AC Concept ☐
- AC Thevenin Theory ☐
- Calibration of Precision AC Voltmeters with AC Voltage Standard ☐
- Error Analysis ☐
- Schering Bridge ☐
- Capacitance Measurements ☐
- Bridge Problems ☐
- AC Components ☐
- Theory and Techniques of Phase Measurements ☐
- Other (specify) ☐

Electromechanical Packaging Basics:
- Introduction and Specifications ☐
- Electrical Packaging Constraints ☐
- Electrical Design and Development ☐
- Fabrication ☐
- Production Units ☐
- Laboratory Testing ☐
- Integration and Electromechanical Instrumentation ☐
- Environmental Testing ☐
- Other (specify) ☐

Antenna and Microwave Theory and Measurements:
- Algebraic Equations ☐
- Simultaneous Equations and Exponents and Radicals ☐
- Powers of Ten and Logarithms ☐
- Trigonometric Functions and Solutions of Triangles ☐
- Vectors and Imaginary Numbers and Vectors and Vector Algebra ☐
- Basic Laws of Current Flow Plus Coulomb and Electrostatics ☐
- Faraday and Electrodynamics Plus Permanent and Electromagnets ☐
- Induction Transformers and Motors Plus Capacity and Capacitive Reactance ☐
- Inductance and Inductive Reactance Plus Admittance, Susceptance and Conductance ☐
- Characteristics of Resonate Circuits Plus Power-Energy into Loads ☐
- Transmission Lines ☐
- Impedance and Admittance Applications ☐
- Frequency ☐
- Maintenance, Care and Use of Sensitive Measuring Devices ☐
- Variable Standing Wave Radio ☐
- Attenuation ☐
- Power ☐
- Special Antenna Measurements ☐
- Trouble Shooting Fundamentals ☐
- Associated Equipment and Equipment Use and Theory ☐
- Other (specify) ☐

Template Layout Basics:
- Flat Pattern Layout ☐
- Form Block Template Layout ☐
- Sample Part Layout ☐
- Design, Apply, Trim, and Drill Template ☐
- Flat and Form Block Template Layout ☐
- Use of Project Tool Manual ☐
- Use of Information from Tool Order ☐
- Right Angle Trigonometry ☐
- Flat Steel Protractor Layout ☐
- Height Gage Layout ☐
- Height Gage Inspection ☐
- Safety Practices ☐
- Other (specify) ☐

Airframe and Power Plant Mechanic:
- Airframe Mechanic:
  - Fundamentals of Aircraft Construction ☐
  - Airframe ☐
  - Rigging ☐
  - Welding ☐
  - Sheetmetal Work ☐
  - Weight and Balance ☐
  - Paint and Dope ☐
  - Metal Fittings ☐
  - Fasteners ☐
- Power Plant Mechanic:
  - Fundamental Theory of Airplane Engines ☐
  - Reciprocating Engines ☐
  - Jet Engines ☐
  - Assembly and Dismantling of Engine ☐
  - Engine Accessories ☐
  - Engine Instruments ☐
  - Carburetion ☐
  - Fuel Metering and Injection ☐
  - Superchargers ☐
  - Flight Control Systems ☐
  - Hydraulics and Plumbing Systems ☐
  - Pneumatic Systems ☐
  - Life Support Systems ☐
  - Pressurization Systems ☐
  - Fundamental Training for FAA:
    - A and P Certificate ☐
    - Airframe Certificate ☐
    - Power Plant Certificate ☐
  - Trouble Shooting ☐
- Other (specify) ☐

Aircraft Electrical Mechanic:
- Fundamentals of Aircraft:
  - Electrical Systems ☐
  - Aircraft Electrical Installation ☐
  - Aircraft Power Systems:
    - Primary Power DC Systems ☐
    - Auxiliary DC Systems ☐
    - Primary Power AC Systems ☐
    - Auxiliary AC Systems ☐
  - Circuit Design ☐
  - Aircraft Circuits ☐
  - Complex Circuits ☐
  - Power Distribution Circuit Design:
    - Single Generator Systems ☐
    - Multi Generator Systems ☐
  - Autopilot and Flight Path Control ☐
  - The Autopilot ☐
  - Special Problems and Designs:
    - Anti-icing ☐
    - De-icing ☐
    - Temperature Control ☐
    - Air Conditioning ☐
  - Propeller Control ☐
  - Gyro Compass Systems ☐
  - Other (specify) ☐

Aircraft Electronic Technician:
- Tool Crib ☐
- Electrical Fabrication and Assembly ☐
- Final Testing Electrical and Hydraulic Systems ☐
- Aircraft Assembly and Systems Checkout ☐
- Electrical and Electronic Equipment Development ☐
- Test Equipment Construction and Calibration ☐
- Final Testing Electronics System ☐
- Electrical Systems Development ☐
- Electrical Systems Inspection ☐
- Other (specify) ☐

Electrical-Electronics Development Mechanic:
- Mechanic ☐
- Tool Crib ☐
- Electrical Fabrication and Assembly ☐
- Sheetmetal Subassembly ☐
- Electrical-Electronic Installation and Checkout ☐
- Final Testing:
  - Pneumatic System ☐
  - Electrical System ☐
  - Electronic System ☐
- Test Equipment-Construction and Calibration ☐
- Electrical-Electronic Systems Development ☐
- Electrical-Electronic Systems Inspection ☐
- Instrumentation-Flight Test ☐
- Other (specify) ☐

Flight Line Mechanic:
- Processing Parts ☐
- Sheet Metal Fabrication and Assembly ☐
- Aircraft Assembly ☐
- Functional Test and Inspection ☐
- Production Flight ☐
- Flight Test ☐
- Other (specify) ☐

Jig and Fixture Builder:
- Jigs and Fixtures ☐
- Structures Assembly ☐
- Machine Tools and Equipment ☐
- Templates and Lofting ☐

- Plaster and Plastics ☐
- Tool Design and Inspection ☐
- Heat Treating and Welding ☐
- Other (specify) ☐

Mock-up/Tooling Development Mechanic:
- Sheet metal Fabrication ☐
- Structural Assembly ☐
- Template Making ☐
- Plaster/Plastics Tooling ☐
- Tool Design and Inspection ☐
- Cabin Furnishings ☐
- Fabrication and Structure Development ☐
- Wood Patternmaking ☐
- Other (specify) ☐

FCC Radiotelephone and Telegraph:
- License Review and Familiarization ☐
- Purpose and Scope of Course ☐
- Batteries and Motors ☐
- Inductance and Inductive Circuits ☐
- Capacitance and Capacitive Circuits ☐
- Basic A/C Circuit Analysis ☐
- Diodes and Power Supplies ☐
- Vacuum Tubes ☐
- Transistors ☐
- Amplifiers, General ☐
- Amplifier Comprehensive Testing ☐
- RF Amplifiers and Resonance ☐
- Oscillators ☐
- Heterodyne and Neutralization ☐
- Modulation and Detection ☐
- Transmitters ☐
- Receivers ☐
- Antennas-Propagation ☐
- Antenna Testing ☐
- Coupling and Frequency Measurement ☐
- Frequency Modulation ☐
- Basic Radar ☐
- Magnetrons and Klystrons ☐
- Communication Laws ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:
- Type of machine:
  - Automatic ☐
  - Console controlled ☐
  - Multi-purpose ☐
  - Multi-acting ☐
  - Multi-spindule ☐
  - Numerical controlled ☐
  - Single acting ☐
  - Single spindle ☐
  - Radial ☐
  - Rotary ☐
  - Rotary head ☐
  - Tape controlled ☐
  - Other (specify) ☐
- Bending machine ☐
- Brake ☐
- Cold roll mill ☐
- Contour roll machine ☐
- Cutoff machine ☐
- Draw roll machine ☐
- Drill press ☐
- Drivematic machine ☐
- Drop hammer ☐
- Duplicating and profiling machine ☐
- Forming roll machine ☐
- Flaring machine ☐
- Hot dimpling machine ☐

Lathes:
- Buffing lathes ☐
- Grinding lathes ☐
- Polishing lathe ☐
- Spinning lathe ☐

- Metallizing machine ☐
- Numbering machine ☐
- Pantograph machine ☐
- Power hammer ☐
- Planishing machine ☐

Presses:
- Arbor press ☐
- Hydraulic press ☐
- Straightening press ☐

- Progressive rolling machine ☐
- Riveting machine ☐
- Router ☐

Saws:
- Hacksaw ☐
- Circular saw ☐
- Bend saw ☐
- Cutoff saw ☐
- Abrasive saw ☐
- Do-all saw ☐

- Shaper ☐

Shears:
- Nibbler ☐
- Squaring shear ☐

- Wiping machine ☐

- Grinders:
  - Pedestal grinder ☐
  - Tool and cutter grinder ☐
- Stretch wrap forming machine ☐
- Silkscreen machine ☐
- Presses:
  - Punch press ☐
  - Stretch press ☐
- Swaging machine ☐
- Tumbling barrel abrasive machine ☐
- Proof loading machine ☐
- Belt sanding machines ☐
- Woodworking machines ☐
- Pattern making machines ☐
- Impact extrusion press ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Pliers ☐
  - Screwdrivers ☐
  - Hammers ☐
  - Mauls ☐
  - Mallets ☐
  - Wrenches:
    - Box ☐
    - Open end ☐
    - Torque ☐
    - Monkey ☐
  - Pipe cutters ☐
  - Pipe benders ☐
  - Pipe threaders ☐
  - Files ☐
  - Tube benders ☐
  - Tube flares ☐
  - Tube cutters ☐
  - Other (Specify) ☐

Equipment:

- Anodizing equipment ☐
- Chemical etching ☐
- Electrolytic cleaning equipment ☐
- Electroplating equipment ☐
- Heat treating equipment ☐
- High energy forming equipment ☐
- Induction brazing equipment ☐
- Photo etching equipment ☐
- Plastics laminating equipment ☐
- Profiling cutting torch equipment ☐
- Oxygraph cutting equipment ☐
- Sandblasting equipment ☐
- Gas generated atmospheric furnaces ☐
- Ovens ☐
- Welders:
  - Flash ☐
  - Spot ☐
  - Roll ☐
  - Seam ☐
  - Other (specify) ☐

Work Aids:

- Measuring devices:
  - Balance gage ☐
  - Calipers:
    - Inside ☐
    - Outside ☐
    - Vernier ☐
  - Dividers ☐
  - Gages:
    - Center gage ☐
    - Dial indicator ☐
    - Feeler gage ☐
    - Fixed gage ☐
    - Height gage ☐
    - Plug gage ☐
    - Screwpitch gage ☐
    - Surface plate ☐
    - Telescoping gage ☐
    - Thickness gage ☐
    - Thread gage ☐
  - Gage blocks:
    - Johannsen blocks ☐
    - Parallel blocks ☐
    - V-blocks ☐
  - Micrometers:
    - Depth micrometer ☐
    - Flange micrometer ☐
    - Inside micrometer ☐
    - Outside micrometer ☐
    - Swiss hole micrometer ☐
    - Tube micrometer ☐
    - Electronic micrometer ☐
  - Angle plates ☐
  - Quadrants ☐
  - Straight edges ☐
  - Depth rules ☐
  - Shrink rules ☐
  - Optical comparator ☐
  - Other (specify) ☐

Testing equipment:

- Wattmeter ☐
- Potentiometer ☐
- Manometer ☐
- Tachometer ☐
- Focometer ☐
- Galvanometer ☐
- Collimator ☐
- Dynanometer ☐
- Extensometer ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS—Continued

- Tensiometer ☐
- Torque meter ☐
- Conductometer ☐
- Frequency meter ☐
- Megohmmeter ☐
- Ammeter ☐
- Power factor meter ☐
- Phase angle meter ☐
- Voltmeter ☐
- Voltohm milliameter ☐
- Photometer ☐
- Electrophotometer ☐
- Light Meter ☐
- Spectrophotometer ☐
- Plastometer ☐
- Durometer ☐
- Densitometer ☐
- Thermometer ☐
- Color machography equipment ☐
- Flight simulators ☐
- Circuit continuity equipment ☐
- Megohm bridge ☐
- Wheatstone bridge ☐
- Impedance measuring equipment ☐
- Oscillographs ☐
- Oscilloscopes ☐
- Metalograph ☐
- Transit ☐
- Optical protractor ☐
- Binocular microscope ☐
- Optical centering instrument ☐
- Stress strain recorders ☐
- Pneumatic test equipment ☐
- Hydrostatic test equipment ☐
- Hardness testers ☐
- Burst testers ☐
- Bend fatigue machine ☐
- Magnaflux test equipment ☐
- Ultra sonic test equipment ☐
- Fluorescent penetrant test equipment ☐
- Approval slips ☐
- Acceptance slips ☐
- Rejection slips ☐
- Engineering drawings ☐
- Inspection orders ☐
- Records ☐
- Graphs ☐
- Tables ☐
- Specimens ☐
- Specifications ☐
- Test sheets ☐
- Checkout lists ☐
- Design change sheets ☐
- Tooling specifications ☐
- Fabricating specifications ☐
- Bench assembly specifications ☐
- Schedules ☐
- Structural assembly specifications ☐
- System installation specifications ☐
- Sketches ☐
- Plumb bob ☐
- Microscope ☐
- Master patterns ☐
- Master templates ☐
- Holding devices ☐
- Jigs ☐
- Fixtures ☐
- Patterns ☐
- Other (specify) ☐

AERO-ASTRO PRODUCTS AND SYSTEMS

Record an "X" to indicate product, structure, or system worked on.

- Aerospace products:
  - Space vehicles:
    - Space craft:
      - Manned spacecraft ☐
      - Unmanned spacecraft ☐
      - Modules ☐
    - Missiles:
      - Surface to air ☐
      - Surface to surface ☐
      - Air to surface ☐
      - Intercontinental ☐
      - Booster vehicles ☐
      - Launch vehicles ☐
      - Test stands ☐
    - Space simulators ☐
    - Environmental simulators ☐
    - Other (specify) ☐
- Aircraft:
  - Helicopters:
    - STOL ☐
    - VTOL ☐
  - Hypersonic aircraft ☐
  - Military aircraft:
    - Strategic aircraft ☐
    - Tactical aircraft ☐
    - Support aircraft ☐
    - Training aircraft ☐
  - Supersonic aircraft ☐

AERO-ASTRO PRODUCTS AND SYSTEMS—Continued

- Transport aircraft:
  - Cargo aircraft ☐
  - Commercial aircraft ☐
- Private aircraft ☐
- Other (specify) ☐

- Aircraft training products:
  - Aircraft simulators ☐
  - Operational simulators ☐
  - Training simulators ☐
  - Link trainers ☐
  - Other (specify) ☐

- Aircraft structures:
  - Airframe ☐
  - Wings ☐
  - Tailsections ☐
  - Fuselages ☐
  - Arresting gear ☐
  - Landing gear ☐
  - Bomb bays ☐
  - Aircraft compartmentation ☐
  - Other (specify) ☐

- Spacecraft structures:
  - Capsules ☐
  - Nose cones ☐
  - Booster vehicle structures ☐
  - Launch vehicle structures ☐
  - Missile structures ☐
  - Re-entry structures ☐
  - Other (specify) ☐

- Miscellaneous structures ☐
  - Wind tunnels ☐
- Craft systems:
  - Propulsion systems:
    - Turbo jet ☐
    - Ram jet ☐
    - Piston driven ☐
    - Rocket driven ☐
    - Fan jet ☐
    - Other (specify) ☐
  - Flight control systems ☐
  - Hydraulics and plumbing systems ☐
  - Navigational systems ☐
  - Communication systems ☐
  - Electrical-electronic systems ☐
  - Instrument systems ☐
  - Life-support systems ☐
  - Pneumatic systems ☐
  - Armament systems ☐
  - Inertial guidance systems ☐
  - Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

BUILDING AND CONSTRUCTION TRADES

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Supervises, and coordinates activities of, workers engaged in building and construction craft activities as:

- Carpentry ☐
- Plastering ☐
- Waterproofing ☐
- Concrete masonry ☐
- Bricklaying ☐
- Stone setting ☐
- Tile setting ☐
- Pipefitting ☐
- Structural steel erection ☐
- Plumbing ☐
- Asbestos and insulation work ☐
- Paperhanging ☐
- Lathing ☐
- Pipelaying ☐
- Concrete and asphalt paving ☐
- Floorlaying ☐
- Glaziery ☐
- Roofing ☐
- Rigging ☐
- Elevator constructing ☐
- Tank building and erecting ☐
- Marble setting ☐
- Monument setting ☐
- House moving ☐
- Ornamental and architectural iron erection ☐
- Mining ☐
- Drywall applicating ☐
- Insulating work ☐
- Other (specify) ☐

Operating equipment as:

- Grading equipment ☐
- Excavating equipment ☐
- Concrete paving equipment ☐
- Asphalt paving equipment ☐
- Dredging equipment ☐
- Pile driving equipment ☐
- Welldrilling equipment ☐
- Tunneling equipment ☐
- Other (specify) ☐

- Materials:
  - Handling equipment ☐
  - Transporting equipment ☐
  - Mixing equipment ☐
  - Pumping equipment ☐
  - Other (specify) ☐

- Tending ☐
  - Concrete or plaster:
    - Batching equipment ☐
    - Pumping equipment ☐
    - Spraying equipment ☐
    - Other (specify) ☐

- Plans and determines:
  - Manpower requirements ☐
  - Worker schedules ☐
  - Construction procedures ☐
  - Maintenance procedures ☐
  - Inspection requirements ☐
- Prepares work schedules ☐
- Assigns workers to duties ☐
- Gives work directions to workers ☐
- Interprets building plans, structural specifications, drawings, and technical data ☐
- Trains workers in:
  - Craft duties ☐
  - Operation of machines and equipment ☐
  - Safety practices and regulations ☐
- Advises workers in methods and procedures for solving work problems ☐
- Coordinates:
  - Craft activities with other craft activities ☐
  - Worker activities ☐
  - Building inspection activities ☐
- Enforces worker compliance with established work procedures, regulations, and safety rules ☐
- Recommends promotions, demotions, discharges, and disciplinary actions ☐
- Evaluates workers performance ☐
- Requisitions materials, tools, and equipment ☐
- Requisitions machine maintenance and repair ☐
- Keeps records of workers performance ☐
- Prepares reports on construction or maintenance activities ☐
- Other (specify) ☐

- Operates equipment to:
  - Grade construction sites ☐
  - Excavate earth and other materials ☐
  - Pave highways and streets ☐
  - Dredge sand and other materials ☐
  - Drive pilings ☐
  - Drill wells ☐
  - Bore tunnels ☐
  - Handle materials ☐
  - Transport materials ☐
  - Mix materials ☐
  - Pump materials ☐
  - Other (specify) ☐

- Moves levers, turns controls, or depresses pedals to:
  - Start or stop equipment ☐
  - Guide or steer equipment ☐
  - Position attachments for specific operations ☐
  - Perform operations ☐
  - Reposition attachments or equipment ☐
  - Other (specify) ☐

- Tends equipment or machines to:
  - Mix batches of concrete, plaster, or other covering materials ☐
  - Pump concrete, plaster, or other materials ☐
  - Spray materials on structure ☐
  - Maintain pressure in underground structures or chambers (locks) ☐
  - Other (specify) ☐

- Constructs, erects, or builds:
  - Wooden structures and fixtures ☐
  - Structural steel framework ☐
  - Tanks ☐
  - Concrete forms and pouring chutes ☐
  - Scaffolding ☐
  - Fences ☐
  - Metal framework ☐
  - Stairways ☐
  - Elevators or moving stairways ☐
  - Other (specify) ☐

- Sets:
  - Marble slabs or blocks ☐
  - Stone ☐
  - Tile ☐
  - Artificial stone ☐
  - Monuments ☐
  - Other (specify) ☐

- Fits and installs:
  - Steam, gas, water, or acid piping systems ☐
  - Plumbing systems and fixtures ☐
  - Pneumatic tube conveyor systems ☐
  - Pneumatic control system piping ☐
  - Cabinets ☐
  - Window frames ☐
  - Partitions ☐
  - Doors ☐
  - Door frames ☐

- Weather stripping ☐
- Wooden trim ☐
- Metal hardware ☐
- Structural steel ☐
- Structural glass ☐
- Other (specify) ☐

Lays:
- Brick structural tile and block materials ☐
- Terrazzo floors ☐
- Flooring and subflooring ☐
- Floor coverings and foundation materials ☐
- Pipe for storm drains, sewers, and water mains ☐
- Other (specify) ☐

Applies:
- Composition weatherboard on exterior surfaces ☐
- Siding materials on exterior surfaces ☐
- Decorative and protective paint on building surfaces ☐
- Stucco on exterior surfaces ☐
- Plasterboard onto walls and ceilings ☐
- Waterproofing material on exterior surfaces ☐
- Calking compounds in cracks and crevices ☐
- Coats of plaster on interior surfaces ☐
- Sizing compound on work surfaces ☐
- Roofing materials on structures ☐
- Insulating materials on equipment and piping systems ☐
- Other (specify) ☐

Fastens:
- Lathing materials on walls and ceilings ☐
- Acoustical tile on ceilings ☐
- Facing brick on sides of structures ☐
- Insulation materials onto walls, floors, and ceilings ☐
- Paneling on walls ☐
- Other (specify) ☐

Blows insulating materials into spaces of structures ☐

Finishes:
- Wooden floors ☐
- Concrete surfaces ☐
- Plaster surfaces ☐
- Stucco surfaces ☐
- Other (specify) ☐

Reviews, studies, or analyzes:
- Blueprints ☐
- Sketches ☐
- Building plans ☐
- Architects drawings ☐
- Bills of materials ☐
- Work order specifications ☐
- Structural specifications ☐
- Construction plans ☐
- Contract specifications ☐
- Other (specify) ☐

Determines:
- Building sequences ☐
- Construction sequences ☐
- Installation sequences ☐
- Methods and procedures for specified work ☐
- Other (specify) ☐

Calculates:
- Material requirements ☐
- Equipment requirements ☐
- Job costs ☐
- Building angles and courses ☐
- Other (specify) ☐

Measures:
- Structural areas ☐
- Dimensions of structure ☐
- Material length, width, or thickness ☐
- Other (specify) ☐

Selects specified materials:

Lays out:
- Reference points and lines ☐
- Material cutting lines ☐
- Assembly lines ☐
- Work guidelines ☐
- Foundation lines ☐
- Grading lines ☐
- Fence lines ☐
- Other (specify) ☐

Prepares surfaces or areas for work by:
- Sanding ☐
- Cleaning ☐
- Chipping ☐
- Scraping ☐
- Filling holes, cracks, crevices, or joints ☐
- Scaling ☐
- Sealing ☐
- Removing fixtures or obstacles ☐
- Masking or covering non-work areas ☐
- Removing rough or defective surfaces ☐
- Other (specify) ☐

Cuts material into specified:
- Shape ☐

- Size ☐
- Length ☐
- Width ☐
- Thickness ☐
- Other (specify) ☐

Spreads:
- Concrete to specified depth ☐
- Mortar on brick, structural tile, blocks and other materials ☐
- Stucco onto exterior surfaces ☐
- Plaster onto walls or over lathing ☐
- Mastic or other adhesive on floor or foundation coating ☐
- Paste on wallpaper ☐
- Putty on sash of windows ☐
- Other (specify) ☐

Joins, secures, or fastens material by:
- Nails ☐
- Metal straps ☐
- Staples ☐
- Dowels ☐
- Threaded joints ☐
- Calked joints ☐
- Rivets ☐
- Soldered joints ☐
- Brazing ☐
- Welding ☐
- Wire ☐
- Hangers ☐
- Brackets ☐
- Screws ☐
- Bolts ☐
- Anchor bolts ☐
- Cement ☐
- Adhesive ☐
- Mastic ☐
- Glazier points ☐
- Mortar ☐
- Pins ☐
- Glue ☐
- Clips ☐
- Tie rods ☐
- Braces ☐
- Putty ☐
- Other (specify) ☐

Mixes by hand or machine:
- Paint pigments, vehicle, and coloring ☐
- Wallpaper paste ☐
- Sealing compounds ☐
- Mortar ☐
- Other (specify) ☐

Verifies alinement of:
- Parts ☐
- Structures ☐
- Stone ☐
- Brick ☐
- Installation ☐
- Other (specify) ☐

- Breaks or cuts off excess material ☐

Drills hole for:
- Attaching material on structures ☐
- Installing material ☐

Fills joints with:
- Calking materials ☐
- Lead ☐
- Calking compound ☐
- Sealing compound ☐
- Mortar ☐
- Other (specify) ☐

Cuts and bends:
- Pipe into specified size and shape ☐
- Lathing to fit openings, corners, and projections ☐
- Threads pipe ☐
- Digs foundation trenches ☐
- Pours concrete foundations ☐
- Mounts hangers and brackets ☐
- Replaces defective piping ☐
- Brushes, sprays, or rolls paint on surfaces ☐
- Cleans equipment and tools ☐
- Matches design and pastes paper on wall ☐
- Polishes stone or marble ☐
- Positions glass in window sashes ☐
- Assembles glass doors and windows in metal frames ☐
- Smooths wallpaper on wall ☐
- Inspects piping system for defects ☐
- Tests piping systems for leaks ☐
- Paints and insulates pipes and fittings ☐
- Molds concrete expansion joints ☐
- Repairs defects in material ☐
- Presses brick or tile into mortar ☐
- Nails or cements waterproof materials on roof ☐
- Digs postholes and sets posts ☐
- Stretches wire and attaches it onto posts ☐
- Replaces leaky faucet washers ☐
- Opens clogged drains ☐
- Attaches molding around windows, doors, and other openings ☐
- Directs workers to mix plaster or other materials ☐

WHAT THE WORKER DOES—Continued

- Wires lathing strips on furring ☐
- Wires lathing channels onto overhead structural framework ☐
- Presses sealing tape over compound and joints in drywall ☐
- Fills hopper of mixing machine with materials ☐
- Turns valves to regulate pumps and air compressor ☐
- Guides nozzle of calking gun along crevices in structure ☐
- Presses lever to discharge compound into crevice ☐
- Carries materials to craftsmen ☐
- Stacks materials adjacent to worker ☐
- Cleans finished structures ☐
- Signals operating personnel actions to be taken ☐
- Attaches slings onto materials for hoisting operations ☐
- Guides materials into position ☐
- Positions beams for supporting structure ☐
- Jacks house up and places dollies under beams ☐
- Attaches towing bar onto dollies ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Building Contractor ☐
- Trade Contractor ☐
- Construction Superintendent ☐
- Supervisors ☐
- Supervisors of Other Trades ☐
- Workers ☐
- Helpers ☐
- Apprentices ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training required.

- Elementary ☐
- Junior High School ☐
- High School ☐
- Junior College ☐
- Vocational School ☐
- Technical Training ☐
- On-the-job Training ☐
- Apprenticeship Training (see apprentice listing) ☐
- Other (specify) ☐

LICENSURE OR CERTIFICATION

Record an "X" to indicate licenses or certification required.

- Federal ☐
- State ☐
- County ☐
- City ☐
- Other (specify) ☐

BUILDING TRADES AND CONSTRUCTION APPRENTICESHIPS

Record an "X" to indicate type of apprenticeship training.

- Asbestos and Insulation Worker ☐
- Bricklayer ☐
- Carpenter ☐
- Cement Mason ☐
- Elevator Constructor ☐
- Floor Layer ☐
- Glazier ☐
- Iron Worker:
  - Ornamental Iron Worker ☐
  - Reinforcing Iron Worker ☐
  - Structural Steel Worker ☐
- Lather ☐
- Marble Mason ☐
- Painter and Decorator ☐

- Paperhanger ☐
- Pipefitter ☐
- Plasterer ☐
- Plumber ☐
- Roofer ☐
- Sprinkler Fitter ☐
- Steamfitter ☐
- Stone Mason ☐
- Terrazzo Worker ☐
- Tile Setter ☐
- Operating Engineer:
  - Construction Equipment Operator ☐
  - Dredge Operator ☐
  - Pile Driver ☐
  - Hoisting and Portable Equipment Operator ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

Trade Related Subjects and Courses:

- Applied Science ☐
- Applied Chemistry ☐
- Applied Physics ☐
- Architectural Drawing ☐
- Blueprint Reading ☐
- Building Regulations and Codes ☐
- Electrical Theory ☐
- Electronic Theory ☐
- Interpretation of Drawings ☐
- Estimating ☐
- Foremanship and Supervision ☐
- Human Behavior ☐
- Inspection ☐
- Practical Geometry ☐
- Practical Trigonometry ☐
- Safety Practices ☐
- Safety Regulations ☐
- Sketching ☐
- Trade Mathematics ☐
- Trade Science ☐
- Welding ☐
- Other (specify) ☐

Trade Theory:

- Asbestos and Insulation Worker:
  - Insulating Materials ☐
  - Pipe Coverings ☐
  - Insulating:
    - Steam Piping ☐
    - Ventilation Systems ☐
    - Machinery and Equipment ☐
    - Refrigeration Equipment ☐
    - Refrigeration Piping ☐
    - Air Conditioning Piping ☐
  - Methods of Application ☐
  - Tools and Their Uses ☐
  - Insulation Covering Materials ☐
  - Methods of Covering Insulation ☐
  - Other (specify) ☐
- Bricklayer:
  - History of Masonry ☐
  - Masonry Materials ☐
  - Application of Masonry Materials ☐
  - Tool Terminology ☐
  - Tool Description, Purposes, and Uses ☐
  - Functional Principles of Masonry Tools ☐
  - Types of Bonding Materials ☐
  - Types and Uses of Reinforcing Materials ☐
  - Safe Use of Tools, Scaffolding, and Materials ☐
  - Mixing and Application of Mortars ☐
  - Laying of:
    - Cement Blocks ☐
    - Common Brick ☐
    - Architectural Terra Cotta ☐
    - Facing Brick ☐
    - Refractory Brick ☐
  - Construction of:
    - Walls ☐
    - Corners ☐
    - Angles and Courses ☐
    - Pilasters ☐
    - Piers ☐
    - Footings ☐
    - Columns ☐
    - Chimneys ☐
    - Smokestacks ☐
    - Fireplaces ☐
    - Hearths ☐
    - Reinforced Masonry ☐
  - Cleaning and Preparing Surfaces ☐
  - Pointing ☐
  - Calking and Grouting ☐
  - Other (specify) ☐
- Carpenter:
  - History and Orientation ☐
  - Introduction to Handtools and Materials ☐
  - Handtool Skills ☐
  - Principles of Machine Tools ☐

- Machine Tools Operation ☐
- Forms, Foundations, and Concrete ☐
- Principles of Construction ☐
- Framing Construction ☐
- Principles of Exterior Finish ☐
- Application of Interior Finish ☐
- Introduction to Stairbuilding ☐
- Layout and Construction of Stairs ☐
- Heavy Construction Principles ☐
- Form Detailing and Construction ☐
- Hardware and Installation ☐
- Door Hanging ☐
- Cabinet Work ☐
- Other (specify) ☐

Cement Mason:
- Masonry Materials ☐
- Trade Tools and Equipment ☐
- Forms and Form Construction ☐
- Working Characteristics of Materials ☐
- Concrete Working Techniques ☐
- Concrete Finishing Techniques ☐
- Expansion Joints ☐
- Concrete Handwork ☐
- Concrete Machine Work ☐
- Other (specify) ☐

Elevator Constructor:
- Materials and Equipment ☐
- Controls ☐
- Installation Procedures ☐
- Installing:
  - Guide Rails ☐
  - Hoisting Equipment and Motors ☐
  - Counterweights ☐
  - Control Systems ☐
  - Signaling Equipment ☐
  - Safety Devices ☐
- Elevator Testing and Adjusting ☐
- Elevator Maintenance and Repair ☐
- Other (specify) ☐

Floor Layer:
- Materials of Trade ☐
- Types of Adhesives ☐
- Surface Preparation ☐
- Work Layout ☐
- Material Cutting, Fitting, Molding ☐
- Trade Tools and Equipment ☐
- Tile Laying Techniques ☐
- Linoleum Laying Techniques ☐
- Other (specify) ☐

Glazier:
- Trade History and Orientation ☐
- Trade Tools and Equipment ☐
- Materials ☐
- Glass Specifications ☐
- Types and Qualities of:
  - Glass ☐
  - Metal ☐
  - Special Fastening Devices ☐
- Job Site Layout Methods ☐
- Methods of Cutting and Installing:
  - Glass ☐
  - Mirrors ☐
  - Glass Doors and Partitions ☐
- Manufacture and Preparation of:
  - Insulated Glass Units ☐
  - Corrugated Glass Units ☐
- Types and Application of Structural Glass ☐
- Other (specify) ☐

Iron Worker:
- History and Scope of Ironworking Trade ☐
- Tools and Equipment ☐
- Rope Knots and Hitches ☐
- Care and Handling of Rope ☐
- Handtools ☐
- Cable Working Loads ☐
- Hardware ☐
- Cranes, Derricks, and Poles ☐
- Principles of Ironworking Trade:
  - Structural Principles ☐
  - Ornamental Principles ☐
  - Reinforced Iron Principles ☐
- Materials of Trade:
  - Rolled Steel Shapes ☐
  - Rolled Sheet Steel ☐
  - Corrugated Materials ☐
  - Fabricated Steel Shapes ☐
  - Ornamental Materials ☐
  - Fasteners ☐
- Classes of Leverages ☐
- Gears and Ratios ☐
- Weights of Materials ☐
- Care and Use of Transit ☐
- Scaffolding and Ladders ☐
- Structural Steel Erection ☐
- Machinery, Moving and Rigging:
  - Reeving of Rope ☐
  - Use and Care of Wire Rope ☐
  - Splicing of Fiber and Wire Rope ☐
  - Rigging Hardware and Attachments ☐
  - Hoisting Equipment ☐
  - Guy Lines and Anchorages ☐
  - Jacks, Rolls, and Skids ☐

- Structural Steel Erection:
  - Fabrication Procedures ☐
  - Material Identification ☐
  - Material Handling and Transporting ☐
  - Connecting, Hooking-on, Taglining ☐
  - Plumbing and Leveling ☐
  - Mechanical Fasteners ☐
  - Connections of Structural Steel ☐
  - Structural Rigging ☐
  - Parts and Erection Methods of:
    - Towers ☐
    - Buildings ☐
    - Bridges ☐
  - Structural Safety ☐
  - Signalling Methods ☐
- Reinforcing Ironwork:
  - Identification of Materials ☐
  - Hand and Bending Tools ☐
  - Fabrication ☐
  - Accessories ☐
  - Unloading and Sorting of Materials ☐
  - Types of Material Ties ☐
  - Footings ☐
  - Placing ☐
  - Joint Preparation ☐
  - Welding Procedures ☐
- Ornamental Ironwork:
  - Handtools ☐
  - Drills and Taps ☐
  - Doors and Elevator Fronts ☐
  - Curtain Wall Construction ☐
  - Sashes ☐
  - Stairways ☐
  - Handrails ☐
  - Layout ☐
  - Fasteners ☐
- Sheeting and Fencing:
  - Sheeting Materials ☐
  - Sheeting Erection Methods ☐
  - Service Station Materials ☐
  - Service Station Erection Methods ☐
  - Fencing Materials ☐
  - Fencing Erection Methods ☐
- Other (specify) ☐

- Lather:
  - Lathing Materials ☐
  - Trade Tools and Equipment ☐
  - Lathing Methods and Techniques ☐
  - Specifications for Lathing ☐
  - Lathing and Metal Layout ☐
  - Structural Components ☐
  - Lathing Accessories ☐
  - Installation of:
    - Lathing ☐
    - Lathing Accessories ☐
- Lathing:
  - Partitions and Walls ☐
  - Ceilings ☐
  - Exterior Surfaces ☐
- Other (specify) ☐

- Painter and Decorator:
  - History and Background of Trade ☐
  - Health and Safety Measures ☐
  - Materials of Trade and Uses ☐
  - Basic Uses of Trade Tools ☐
  - Laws Governing Worker ☐
  - Preparing Colors and Materials ☐
  - Methods of Applying Materials ☐
  - Hardwood and Hardwood Finishes ☐
  - Architectural Decorating Practices and Finishes ☐
  - Basic Graining and Marbling ☐
  - Mixing and Matching Colors ☐
  - Principles of Color Harmony ☐
  - Color Chemistry ☐
  - Psychology of Color ☐
  - Care of Tools and Equipment ☐
  - Other (specify) ☐

- Paperhanger:
  - Materials of Trade ☐
  - Tools of Trade ☐
  - Selection and Use of Tools ☐
  - Preparation of Surfaces ☐
  - Application of:
    - Wallpaper ☐
    - Canvas ☐
    - Muslin ☐
    - Fabrics ☐
  - Systems of Color Notation ☐
  - Principles of Color Harmony ☐
  - Other (specify) ☐

- Plasterer:
  - History and Development of Trade ☐
  - Chemistry of Plastering Materials ☐
  - Proportions of Materials ☐
  - Lath and Masonry Bases ☐
  - Plastering Materials ☐
  - Job Conditions Affecting Plastering ☐
  - Plaster Cracks and Causes ☐
  - Dotting, Pressed Screeds, and Water Leveling ☐
  - Job Layout Problems ☐
  - Acoustical Plastering ☐
  - Effect of Weather on Plastering ☐
  - Effect of Poor Construction and Application ☐

- Mitering Breaks and Returns ☐
- Geometrical Layout Problems ☐
- Molding and Casting ☐
- Application of Materials ☐
- Finishing Surfaces ☐
- Other (specify) ☐

Pipe and Steam Fitter:
- History and Development of Trade ☐
- Science of Heating and Refrigeration ☐
- Dimension Standards ☐
- Characteristics and Use of Piping ☐
- Mathematical Measurements ☐
- Steam Power ☐
- Process Piping, Theory and Installation ☐
- Principles of Heating Systems ☐
- Operation of Heating Systems ☐
- Standards for Heating Equipment ☐
- Low Pressure Heating Systems ☐
- Air Conditioning ☐
- Plumbing Fixtures, Installation, Applications, Testing, Servicing ☐
- Heating and Refrigeration Equipment, Servicing and Maintenance ☐
- Layout and Installation of Air Conditioning Piping System ☐
- Other (specify) ☐

Plumber:
- Plumbing Materials ☐
- Trade Tools and Uses ☐
- Principles and Practices of Water Supply and Distribution ☐
- Formulas ☐
- Charts and Conversion Tables ☐
- Coefficients and Factors ☐
- Pipe Size Calculations ☐
- Structural Standards of Fixture Design ☐
- Fixtures and Special Applications ☐
- Layout for Plumbing and Pipefitting ☐
- Composition, Manufacture, and General Specifications for Pipe and Fittings ☐
- Bacteriological Considerations ☐
- Backflow Conditions and Prevention ☐
- System Design for Prevention of Water Pollution ☐
- Conventional and Practical Layout Methods ☐
- Piping Layout ☐
- Layout Methods ☐
- Fabrication and Erection of Piping ☐
- Installation and Testing of Plumbing Fixtures and Appliances ☐
- Other (specify) ☐

Roofer:
- Materials of Trade ☐
- Use and Care of Tools and Equipment ☐
- Preparation of Work Surfaces ☐
- Installation Methods for Slate, Tile, Terra Cotta, Paper ☐
- Application Methods for Tar, Pitch, Asphalt, Gravel, and Paper ☐
- Principles of Waterproofing and Damproofing ☐
- Procedures of Waterproofing and Damproofing ☐
- Other (specify) ☐

Sprinkler Fitter:
- History of Trade ☐
- Classes of Systems ☐
- Elements of Design ☐
- Underground Piping ☐
- Sprinkler Heads ☐
- Valves ☐
- Dry System ☐
- Mechanical Alarms ☐
- Electric Alarms ☐
- Fire Department Connection Alarms ☐
- Supervisory Alarms ☐
- Special Sprinkler Systems ☐
- Thermostatically Controlled Systems ☐
- Details of Systems Installation and Design ☐
- Rigging and Scaffolding ☐
- Elements of Costs ☐
- Job Planning ☐
- Other (specify) ☐

Stone Mason — Marble Mason:
- History of Masonry Trade ☐
- Application of Masonry Methods ☐
- Tool Terminology ☐
- Tool Descriptions, Purposes, Uses ☐
- Functional Principles of Masonry Tools ☐
- Masonry Materials ☐
- Types of Bonding Materials ☐
- Types and Uses of Reinforcing and Fastening Materials ☐
- Mixing and Application of Bonding Materials ☐
- Layout of Work ☐
- Fitting and Setting of Material on Walls, Floors, Stairs, and Arches ☐
- Cleaning of Materials ☐

- Pointing and Grouting ☐
- Preparation of Working Surfaces ☐
- Other (specify) ☐

Tile Setter:
- History of Tile, Mortar, and Materials ☐
- Tools of Trade and Uses ☐
- Surface Preparation ☐
- Work Layout ☐
- Use of Hawk and Trowel ☐
- Strip Setting ☐
- Open Joint and Cove Installation of Glazed Mosaic, Ceramic, Quarry, and Cement Tile ☐
- Installing Tile on:
  - Floors ☐
  - Walls ☐
  - Drainboards ☐
  - Ceilings ☐
  - Jambs ☐
  - Curbs ☐
  - Gutters ☐
  - Columns ☐
  - Stairs ☐
  - Domes ☐
  - Arches ☐
  - Panels ☐
  - Fireplaces ☐
- Tile Classifications ☐
- Glass Mosaics ☐
- New Materials ☐
- Other (specify) ☐

Operating Engineer:
- Historical Background ☐
- Safety and First Aid ☐
- Use of Tools:
  - Handtools and Gages ☐
  - Power Tools ☐
  - Shop Tools and Equipment ☐
- Types of Instruments:
  - Leveling Instruments ☐
  - Measuring Instruments ☐
  - Uses of Instruments ☐
- Vehicle Code ☐
- Rigging:
  - Cable and Wire Rope ☐
  - Clamps and Fittings ☐
  - Slings and Spreaders ☐
  - Blocks, Pulleys, and Swivels ☐
  - Weight and Materials ☐
  - Proper Lifting Procedures ☐
- Introduction to Internal Combustion Engines ☐
- Lubrication ☐
- Introduction to Basic Electricity ☐
- Introduction to Basic Hydraulics ☐
- Converters ☐
- Fluid Drives ☐
- Gears and Reductions ☐
- Transmissions ☐
- Introduction to Basic Pneumatics ☐
- Differentials and Rear Ends ☐
- U-Joints and Drives ☐
- Orientation to Heavy Equipment ☐
- Construction Equipment Operators:
  - Grade Plans and Earthwork:
    - Earth Moving ☐
    - Importance of Good Safety Practices ☐
  - Measurements Used in Earthwork ☐
  - Slopes, Grades, and Stakes ☐
  - Types of Soil and Effects on Earthwork ☐
- Materials and Their Applications:
  - Aggregates and Their Uses ☐
  - Concrete ☐
  - Asphalt ☐
  - Application of Asphalt Pavement ☐
  - Application of Concrete Pavement ☐
- Shovel and Crane Type Equipment:
  - Shovel ☐
  - Crane ☐
  - Clamshell ☐
  - Dragline ☐
  - Backhoe ☐
  - Gradeall ☐
  - Mucking Machine ☐
  - Excavator ☐
  - Pile Driver ☐
- Material Hoisting and Handling Equipment:
  - Cranes and Derricks ☐
  - Belt Type Conveyors ☐
- Tractors:
  - Crawler Type Bulldozers and Rippers ☐
  - Wheel Type Bulldozers ☐
- Graders:
  - Motorized ☐
  - Towed ☐
- Scrapers:
  - Self Powered Type Scrapers ☐
  - Towed ☐
  - Tandem ☐
  - Self Loading ☐
  - Land Levelers ☐
- Loaders:
  - Front End ☐

- Side ☐
- Rear ☐
- Overhead ☐

Compaction Equipment:

- Tandem, Three Wheel, Grid and Offset Rollers ☐
- Sheepfoot, Pneumatic and Wobbly Wheel Rollers ☐
- Vibrating Compactors and Tampers ☐

Work Cycles:

- Advanced Concepts in Measurement ☐
- Understanding Plans and Specifications in Earthwork ☐

Job Methods:

- Haul Engineering ☐
- Ditches, Ditch Gradients, Earthwork and Equipment Selection ☐
- Bids, Contracts, and Performances ☐

Dredge Operator:

- Introduction to Dredging ☐
- Types of Dredges ☐
- Dredge Plant Components ☐
- Dredge Operation ☐

Seamanship:

- Anchors ☐
- Small Boat Handling ☐
- Compass ☐
- Weather ☐
- Marinspike Seamanship ☐

Plant Equipment Operator ☐

Rock, Sand and Gravel Operator:

- Crushers ☐
- Types of Crushers ☐
- Batch Plants ☐
- Processing Plants ☐

Concrete:

- Grizzlies and Screens ☐
- Feeders ☐
- Aggregate Washing and Separating Equipment ☐
- Kinds of Batching Equipment ☐
- Batch Operation ☐
- Trolley Batcher ☐
- Single Material Batcher ☐
- Aggregate Measurement ☐
- Weigh Batcher ☐
- Cement Weigh Hoppers ☐
- Multiple Batcher ☐
- Batching Systems ☐
- Fixed Plants ☐
- Mass Concrete Plant ☐
- Transit Mix Fixed Plant ☐
- Plant Maintenance and Safety ☐

Asphalt:

- Central Mixing Plants ☐
- Cold Aggregate Feeder or Hopper ☐
- Cold Aggregate Elevator ☐
- Dryer Operation ☐
- Dust Operation ☐
- Hot Elevator ☐
- Graduation Control Unit ☐
- Bituminous Mixer ☐
- Fines Feeder ☐
- Boiler ☐
- Belt Conveyor ☐
- Bucket Loader ☐
- Bitumen Heater ☐
- Asphalt Kettle ☐
- Asphalt Distributor ☐
- Asphalt Tank ☐
- Trailer Tank ☐
- Liquid Storage Tank ☐
- Water Tank ☐
- Small Continuous Mix Plant ☐

Conveyors:

- Types of Conveyors ☐
- Construction of Conveyors ☐
- Conveyor Parts ☐
- Adjustment ☐
- Alinement ☐
- Holdbacks ☐
- Hoppers and Loading ☐
- Spillage ☐
- Troughs and Skirts ☐
- Trippers ☐
- Safety Devices ☐
- Inclines ☐
- Capacities ☐
- Shiftable Frames ☐
- Rose Belt ☐
- Extensible Conveyor ☐
- Rough Loader ☐
- Stacker ☐

Controls:

- Type of Controls ☐
- Operation of Controls ☐

Specialized Tools:

- Special Tools Needed on Batch Plants ☐
- Tools and Equipment Needed for Service and Lubrication ☐

Job Methods, Planning and Layout:

- Selection of Equipment for Job ☐
- Selection of Materials Needed ☐
- Troubleshooting ☐
- Job Problems ☐
- Methods of Measurement ☐

- Heavy Duty Repairman:
  - Welding:
    - Principles of Welding and Cutting ☐
    - Oxyacetylene ☐
    - Electric ☐
    - Soldering ☐
    - Preventive Maintenance ☐
    - Safety ☐
  - Internal Combustion Engines:
    - Engine Types ☐
    - Stationary Parts ☐
    - Major Moving Parts ☐
    - Typical Diesel Engines ☐
    - High Compression Gas Engines ☐
    - Auxiliary Systems ☐
  - Crawler Track and Wheel Systems:
    - Frames ☐
    - Springs ☐
    - Undercarriage:
      - Track ☐
      - Rollers ☐
      - Idlers ☐
      - Sprockets ☐
      - Truck Frames ☐
      - Rebuilding Techniques ☐
  - Preventive Maintenance ☐
  - Safety ☐
  - Bases and Carriers:
    - Stationary ☐
    - Mobile ☐
  - Tires and Care:
    - Types of Tires ☐
    - Air Pressure ☐
    - Wheel Failure ☐
    - Tire Repair ☐
  - Brake Systems:
    - Mechanical ☐
    - Hydraulic ☐
    - Electrical ☐
    - Vacuum ☐
    - Brake Booster ☐
    - Repairs ☐
  - Clutches and Frictions:
    - Description and Operation ☐
    - Inspection and Maintenance ☐
    - Minor Adjustments ☐
    - Replace Clutch Springs and Release Bearings ☐
    - Clutch Troubleshooting ☐
  - Steering Systems:
    - Conventional ☐
    - Hydraulic Ram ☐
    - Electrical ☐
    - Clutch Brake ☐
    - Tracks ☐
    - Wheels ☐
    - Legs ☐
  - Electricity:
    - Coils ☐
    - Distributors ☐
    - Starter Motors and Controls ☐
    - Alternators, Regulators, Generators and Rectifiers ☐
    - Heavy Duty Lightning Systems ☐
    - Ignition Systems ☐
    - Storage Batteries ☐
    - Tune-Up Procedures ☐
    - Accessories ☐
  - Hydraulics:
    - Introduction ☐
    - Liquid Flow ☐
    - Pipe Fittings and Seals ☐
    - Valves and Pumps ☐
    - Hydraulic Systems ☐
  - Pneumatics:
    - Basic Pneumatics ☐
    - Compressors ☐
  - Convertors:
    - Uses ☐
    - Types ☐
    - Charging System ☐
    - Lockup ☐
    - Overrunning Clutch ☐
    - Heat Exchangers ☐
    - Types of Fluids ☐
    - Filter System ☐
  - Fluid Drive:
    - Types of Fluid Drive ☐
    - Service and Maintenance ☐
  - Gear and Reductions:
    - Multiple Speed ☐
    - Multiple Drive ☐
  - Transmissions:
    - Function ☐
    - Gearing ☐
    - Gear Material ☐
    - Types ☐
    - Disassembly ☐
    - Cleaning and Inspection ☐
    - Reassembly ☐
    - Adjustment ☐
  - Final Drives:
    - Single Reduction ☐
    - Planetary ☐
  - Differentials and Rear Ends:
    - Single Reduction Axles ☐
    - Two-Speed Axles ☐
    - Tandem Drive Axles ☐
    - Axle Shifting Systems ☐

- U-Joints and Drive Lines:
  - Types ☐
  - Inspection ☐
- Manual and Parts Book ☐
  - Use and Familiarization ☐
- Engine Principles and Theory ☐
- Fuel Systems and Carburetion ☐
- Air Intake and Exhaust Systems ☐
- Cooling and Lubrication Systems ☐
- Electricity:
  - Theory of Electricity ☐
  - Parallel Circuits ☐
  - Series Circuits ☐
  - Ohm's Law ☐
  - Fundamentals of Electricity ☐
  - Circuits, Symbols, and Conductors ☐
  - Relays and Switches ☐
  - Magnetism and Induction ☐
  - Electrical Measurement ☐
  - AC and DC Generation ☐
  - Motors ☐
  - DC Circuits ☐
  - Primary and Secondary Batteries ☐
  - AC Current ☐
  - Direct Current Motors and Controls ☐
  - Single and Three Phase Circuits ☐
  - Transformers and Regulators ☐
  - Polyphase Induction Motors ☐
  - Synchronous Motors ☐
  - Set Synchronous Apparatus ☐
  - Single Phase Motors ☐
  - Circuit-Protective and Switching Equipment ☐
  - Electrical Instruments and Measurement ☐
  - Electron Tubes and Devices ☐
  - Types and Sizes of Wire ☐
  - Wire Connections and Joints ☐
  - Wiring of Heavy Appliances ☐
  - Isolated and Standby Power Plants ☐
- Special Engines:
  - Gasoline ☐
  - Diesel ☐
  - Steam ☐
  - Electric ☐
- Hydraulic Systems:
  - Basic Types of Hydraulic Systems ☐
  - Similarity to Air Pressure ☐
  - Pascal's Law ☐
  - Hydraulic Properties of Oil ☐
  - Basic Hydraulic Pump ☐
  - Advantages of Hydraulic Transmission ☐
  - Hydraulic Terms ☐
  - Symbols and Circuits ☐
  - Pumps and Motors ☐
  - Basic Valve Types ☐
  - Cylinder Structure ☐
  - Type of Hoses ☐
  - Seals ☐
  - Choosing Right Oil ☐
  - Purposes of Reservoirs ☐
  - Damaging Effect of Dirt ☐
  - Accumulators ☐
  - Testing Criteria ☐
  - Checking Operating Times ☐
  - Primary Visual Checks ☐
  - Bypass Testing ☐
  - In-Line Testing ☐
- Pneumatic Systems:
  - Basic Systems ☐
  - Compressors ☐
  - Portable Type ☐
  - Construction ☐
  - Rating ☐
  - Pressure Control ☐
  - Heat ☐
  - Rotary Compressors ☐
  - Reciprocating Compressors ☐
  - Operation ☐
  - Air Lines and Accessories ☐
  - Air Motors ☐
  - Tanks ☐
  - Governors ☐
  - Other (specify) ☐

UNION AFFILIATION

Record an "X" to indicate union affiliation.

- International Unions:
  - Bricklayers, Masons, and Plasterers International Union of America ☐
  - Brotherhood of Painters, Decorators, and Paperhangers of America ☐
  - International Association of Heat and Frost Insulators and Asbestos Workers ☐
  - International Association of Bridge, Structural, and Ornamental Iron Workers ☐
  - International Union of Operating Engineers ☐
  - International Union of Elevator Constructors ☐

- Laborers International Union of North America ☐
- Operative Plasterers and Cement Masons International Association of United States and Canada ☐
- United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada ☐
- United Brotherhood of Carpenters and Joiners of America ☐
- United Rubber, Cork, Linoleum, and Plastic Workers Union ☐
- United Slate, Tile, and Composition Roofers, Damp and Waterproof Workers Association ☐
- Wood, Wire, and Metal Lathers International Union ☐
- Other (specify) ☐

Unions:

- Acoustical, Drywall, Insulation, and Scaffolding ☐
- Acoustic Drywall Workers ☐
- Asbestos Workers ☐
- Bricklayers ☐
- Bricklayers and Masons ☐
- Bricklayers and Stonemasons ☐
- Bricklayers and Tile Setters ☐
- Carpenters ☐
- Carpenters and Joiners ☐
- Cement Masons ☐
- Cement Finishers and Plasterers ☐
- Elevator Constructors ☐
- Floor Layers ☐
- Glaziers and Glass Workers ☐
- Gunite Workers ☐
- Hardwood Floor Carpenters ☐
- Hod Carriers and Laborers ☐
- House Movers ☐
- Iron Workers ☐
- Iron Workers Ornamental and Architectural Local ☐
- Iron Workers and Shopmans Local ☐
- Laborers ☐
- Laborers and Plaster Tenders ☐
- Lathers ☐
- Lathers Nail and Wood Local ☐
- Linoleum, Carpet, and Soft Tile Layers ☐
- Marble Masons ☐
- Operating Engineers ☐
- Operating Engineers Hoisting and Portable Local ☐
- Ornamental Iron Workers Local ☐
- Painters ☐
- Painters and Decorators ☐
- Painters, Decorators, and Paperhangers ☐
- Pile Drivers ☐
- Pile Drivers, Bridge, Wharf, and Dock Builders Local ☐
- Plasterers ☐
- Plasterers and Cement Finishers ☐
- Plasterers and Cement Masons ☐
- Plumbers ☐
- Plumbers and Fitters ☐
- Plumbers and Steamfitters ☐
- Reinforced Iron Workers ☐
- Refrigeration, Air Conditioning, and Fitters ☐
- Roofers ☐
- Shinglers ☐
- Shinglers and Drywall Installers ☐
- Sprinkler Fitters ☐
- Steamfitters ☐
- Terrazzo Workers and Machine Operators ☐
- Tile Layers ☐
- Tile Setters ☐
- Tile and Marble Setters Helpers ☐
- Tile, Marble, and Terrazzo Helpers ☐
- United Mine Workers, Construction Local ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate product produced.

Construction Products:

- Abutments ☐
- Airports ☐
- Alleys ☐
- Aluminum Mills ☐
- Antennas ☐
- Apartments ☐
- Aqueducts ☐
- Asylums ☐
- Athletic Fields ☐
- Auditoriums ☐
- Ball Parks ☐
- Boilers ☐
- Bomb Shelters ☐
- Breakwaters ☐
- Bridges ☐
- Canals ☐
- Canal Locks ☐

- Canal Gates ☐
- Caissons ☐
- Cemetaries ☐
- Cesspools ☐
- Chemical Plants ☐
- Chimneys ☐
- Churches ☐
- Clean Rooms ☐
- Cofferdams ☐
- Conduits ☐
- Culverts ☐
- Curbs ☐
- Dams ☐
- Dikes ☐
- Drainage Canals ☐
- Elevators ☐
- Electric Power Transmission Towers ☐
- Escalators ☐
- Farm Buildings ☐
- Factories ☐
- Fences ☐
- Financial Institutions ☐
- Fire Escapes ☐
- Flood Control Projects ☐
- Freeways ☐
- Garages ☐
- Gas Mains ☐
- Golf Courses ☐
- Grain Elevators ☐
- Harbors ☐
- High Rise Buildings ☐
- Highways ☐
- Hospitals ☐
- Hotels ☐
- Houses ☐
- Hydroelectric Plants ☐
- Industrial Furnaces ☐
- Industrial Ovens ☐
- Industrial Plants ☐
- Institutional Buildings ☐
- Irrigation Projects ☐
- Jettys ☐
- Kilns ☐
- Laboratories ☐
- Levees ☐
- Libraries ☐
- Manholes ☐
- Marinas ☐
- Mine Loading and Unloading Stations ☐
- Missile Facilities ☐
- Mausoleums ☐
- Motels ☐
- Museums ☐
- Oil Refineries ☐
- Parks ☐
- Parking Lots ☐
- Piers ☐
- Pilot Plants ☐
- Pipelines ☐
- Pumping Stations ☐
- Radio Transmitting Towers ☐
- Railroad Roadbeds ☐
- Railroad Structures ☐
- Rapid Transit Structures ☐
- Refineries ☐
- Reservoirs ☐
- Roads ☐
- Rolling Mills ☐
- Recreational Buildings ☐
- Residence ☐
  - Single Family ☐
  - Multi-Family ☐
- Restaurants ☐
- Sewers ☐
- Sewage Plants ☐
- Shopping Centers ☐
- Silos ☐
- Stadia ☐
- Stores ☐
- Subways ☐
- Swimming Pools ☐
- Television Transmitting Towers ☐
- Telephone Transmission Lines ☐
- Transportation Terminals ☐
- Tunnels ☐
- Viaducts ☐
- Waste Disposal Plants ☐
- Waterways ☐
- Wharfs ☐
- Retaining Walls ☐
- Sidewalks ☐
- Storage Tanks ☐
- Structural Steel Framework ☐
- Scaffolds ☐
- Service Stations ☐
- Windmills ☐
- Other (specify) ☐

Systems:

- Air Conditioning ☐
- Heating ☐
- Piping:
  - Water ☐
  - Air ☐
  - Gas ☐
  - Steam ☐
  - Acid ☐
  - Circulating ☐
  - Cooling ☐
- Plumbing ☐

- Refrigeration ☐
- Sprinkler ☐
- Steam ☐
- Ventilating ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

- Construction Machines and Equipment:
  - Canal construction machines:
    - Concrete joint machine ☐
    - Canal liner machine ☐
    - Canal trimmer machine ☐
  - Earth compacting machines:
    - Hydra hammer aero stamper ☐
    - Roller compactor ☐
    - Road pactor ☐
    - Form tamper ☐
    - Blob compactor ☐
    - Tamping machine ☐
  - Earth moving equipment:
    - Backhoe ☐
    - Loader ☐
    - Power shovel:
      - Backhoe shovel ☐
      - Dragline shovel ☐
      - Clamshell shovel ☐
    - Highline cable equipment ☐
    - Remote control earthmover ☐
    - Trencher ☐
    - Skiploader ☐
  - Earth grading machines:
    - Push-pull scraper ☐
    - Selfloading scraper ☐
    - Motor grader ☐
    - Bulldozer ☐
    - Tractor loader ☐
    - Auto grader ☐
  - Excavating machines:
    - Mass excavator ☐
    - Wheel excavator ☐
    - Tower excavator ☐
  - Paving machines and equipment:
    - Asphalt berm curber ☐
    - Asphalt paver ☐
    - Asphalt roller ☐
    - Asphalt screeder ☐
    - Asphalt spreader ☐
    - Asphalt heater and planer ☐
    - Concrete berm curber ☐
    - Concrete curer ☐
    - Concrete lift slab ☐
    - Concrete planer ☐
    - Concrete spreader ☐
    - Concrete mechanical finisher ☐
    - Concrete mobile form traveler ☐
    - Concrete slip form hydraulic equipment ☐
  - Pavement breaker ☐
  - Pipeline construction machines:
    - Cast-in-place pipelayer ☐
    - Pipemobile ☐
    - Pipe wrapper, cleaner, bender ☐
    - Tar pipelining machine ☐
  - Piledriver:
    - Floating piledriver ☐
    - Mobile piledriver ☐
  - Tunnel construction machines:
    - Tunnel boring machines ☐
    - Tunnel heading shield machine ☐
    - Tunnel mucking machine ☐
    - Tunnel mole boring machine ☐
  - Mixing machines:
    - Concrete mixer ☐
    - Concrete batch plant ☐
    - Concrete dual drum mixer ☐
    - Concrete gun mixing machine ☐
  - Pumping equipment:
    - Cement pump ☐
    - Concrete gun pump ☐
    - Concrete pumping machine ☐
      - Mobile concrete pumping machine ☐
  - Drilling machines:
    - Well drilling machines:
      - Cable tool ☐
      - Rotary tool ☐
    - Water well drilling machines ☐
  - Dredges:
    - Clamshell dredges ☐
    - Pump dredges ☐
  - Hoisting equipment:
    - Truck crane ☐
      - Long boom truck crane ☐
    - Tower crane ☐
    - Elevator ☐
    - Cherry picker ☐
    - Chicago boom hoist ☐
    - Mobile lift hoist ☐
    - Stiff leg hoist ☐
    - Tugger hoist ☐
- Tools:
  - Handtools:
    - Drills ☐

- Chisels ☐
- Files ☐
- Knives ☐
- Rules ☐
- Scissors ☐
- Tape Measures ☐
- Scribers ☐
- Wire Cutters ☐
- Levels ☐
- Mauls ☐
- Mallets ☐
- Screwdrivers ☐
- Brushes ☐
- Wrenches ☐
- Clippers ☐
- Needle ☐
- Square ☐
- Trowels ☐
- Sawing Palms ☐
- Hammers ☐
- Saws ☐
- Brick Hammers ☐
- Jointers ☐
- Brick Cutting Chisels ☐
- Planes ☐
- Straight Edge ☐
- Floats ☐
- Whips ☐
- Darbies ☐
- Finishing Trowel ☐
- Pry Bars ☐
- Shears ☐
- Serrated Trowels ☐
- Floor Rollers ☐
- Putty Knives ☐
- Hacksaws ☐
- Bolt Cutters ☐
- Punches ☐
- Hatchets ☐
- Staplers ☐
- Pincers ☐
- Scrapers ☐
- Paint Rollers ☐
- Wallpaper Rollers ☐
- Reamers ☐
- Brace and Bits ☐
- Pipe Threaders and Dies ☐
- Pipe Benders ☐
- Roofing Knives ☐
- Linoleum Knives ☐
- Mops ☐
- Crowbar ☐
- Pointing Trowel ☐
- Stone Masons Hammer ☐
- Other (specify) ☐

Power Handtools:

- Rivet Guns ☐
- Power Drills ☐
- Power Actuated Fastening Devices ☐
- Spray Gun ☐
- Calking Guns ☐
- Grouting Guns ☐
- Gunite Guns ☐
- Cement Guns ☐
- Power Saws ☐
- Pneumatic Drills ☐
- Pneumatic Hammers ☐
- Other (specify) ☐

Equipment:

- Soldering Equipment ☐
- Brazing Equipment ☐
- Welding Equipment ☐
- Tar Kettles ☐
- Lead Pots ☐
- Blow Torches ☐
- Stud Welding Guns ☐
- Other (specify) ☐

Work Aids:

- Blueprints ☐
- Sketches ☐
- Building Plans ☐
- Architects Drawings ☐
- Bills of Materials ☐
- Work Order Specifications ☐
- Structural Specifications ☐
- Construction Plans ☐
- Contract Specifications ☐
- Compasses ☐
- Chalk ☐
- Plumb bob ☐
- Crayons ☐
- Grading Stakes ☐
- Plumb Line ☐
- Transit ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

CHEMICALS AND ALLIED PRODUCTS PROCESSING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates processing activities concerned with manufacture of:
- Basic industrial chemicals ☐
- Chemical materials used in manufacturing of chemical products ☐
- Chemical products used as raw materials in other industries ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers processing materials to produce:
- Industrial organic or inorganic basic chemical products ☐
- Plastics materials or synthetic resins ☐
- Synthetic rubber ☐
- Synthetic and other man-made fibers ☐
- Biological or botanical drugs, medicinal chemicals, or pharmaceutical preparations ☐
- Soaps, detergents, cleaning preparations, or surface acting agents ☐
- Perfumes, cosmetics, and other toilet preparations ☐
- Paints, varnishes, enamels, lacquers, and allied products ☐
- Gum and wood chemicals ☐
- Agricultural chemicals ☐
- Adhesives and gelatins ☐
- Explosives ☐
- Printing inks ☐
- Carbon and lamp blacks ☐
- Ammunition ☐
- Coal tar derivative products ☐
- Compressed and liquefied gases ☐
- Processed oils and fats products ☐
- Other (specify) ☐

- Prepares work and worker schedules ☐
- Assigns workers specific duties ☐
- Interprets processing orders, specifications, and technical data for workers ☐
- Inspects product for conformance with specifications ☐
- Trains workers in machine or equipment operations ☐
- Gives directions to workers concerning processing duties ☐
- Advises workers on methods and procedures for solving work problems ☐
- Reviews laboratory and test reports on materials and products ☐
- Orders changes in processing procedures or equipment operation ☐
- Coordinates processing activities with activities of other units or departments ☐
- Enforces worker compliance with established procedures, regulations and safety rules ☐
- Requisitions materials and supplies for scheduled production ☐
- Notifies maintenance personnel of equipment or machine repairs required ☐
- Keeps processing and production records ☐
- Prepares reports on activities and production ☐
- Other (specify) ☐

Reads or reviews:
- Processing schedules ☐
- Product specifications ☐
- Material specifications ☐
- Production schedules ☐
- Chemical formulas ☐
- Product formulas ☐
- Other (specify) ☐

Determines:
- Setup of processing machines and equipment ☐
- Product processing sequences and priorities ☐
- Material requirements ☐
- Processing requirements ☐
- Routing of inprocess materials through units ☐
- Adjustments to equipment or machinery ☐
- Other (specify) ☐

Sets up and adjusts machines or equipment for other workers ☐

Operates, controls, or tends machines or equipment to:
- Reduce materials into specified size ☐
- Mix, combine, or blend materials for further processing ☐
- Melt or fuse materials into single mass or compound ☐
- Obtain mixture or compound of specific color, texture, or other characteristic ☐
- Cause chemical reaction that changes chemical composition ☐
- Distill liquid or semi-liquid materials for recovering specified substances ☐
- Dry or remove excess moisture from materials or products ☐
- Shape materials or products ☐
- Mold materials or products ☐
- Solidify materials or products ☐
- Roll material into specified product ☐
- Extrude materials into specified product ☐
- Produce product of specified finish or thickness ☐
- Produce products from processed chemicals ☐
- Fill containers with products ☐
- Package product ☐
- Other (specify) ☐

Installs, aligns, and secures:
- Molds or dies in machines ☐
- Cutting or grinding tools in toolholders ☐
- Machine attachments ☐
- Work piece in holding fixture or jig ☐
- Other (specify) ☐

Sets equipment or machine controls for specified:
- Temperature ☐
- Pressure ☐
- Vacuum ☐
- Material feed rates in machines ☐
- Flow rates of materials, gases, or liquids through processing units ☐
- Processing timing cycle ☐
- Routing of materials through processing units ☐
- Material weight ☐
- Volume of materials ☐
- Processing sequences ☐
- Other (specify) ☐

Moves levers or controls to:
- Start or stop machines or equipment ☐
- Begin processing operations ☐
- Regulate chemical reactions of materials ☐
- Regulate material levels in equipment ☐
- Adjust flow of liquids, gases, or materials through processing units ☐
- Adjust operational performance of machines or equipment ☐
- Transfer material into and from machines or equipment ☐
- Perform machine operations ☐
- Other (specify) ☐

Monitors:
- Chemical reactions of materials ☐
- Gages, meters, and recording instruments ☐
- Television pictures of processing operations ☐
- Operational performance of machines and equipment ☐
- Other (specify) ☐

Obtains and trucks materials to work station ☐

Weighs or measures materials specified on formulas ☐

Dumps materials into machine hopper or onto conveyor ☐

Pumps specified materials into equipment ☐

- Opens valves and cross connections to route materials through units [ ]
- Gives workers of crew operational directions [ ]
- Observes inprocess materials in units for:
  - Color [ ]
  - Texture [ ]
  - Consistency [ ]
  - Chemical reaction [ ]
  - Other desirable characteristics [ ]
- Draws sample of material or product for testing or laboratory analysis [ ]
- Performs on-station tests on material or product [ ]
- Analyzes results of laboratory analysis [ ]
- Correlates observations and data to determine adjustments required [ ]
- Inspects machines or equipment for leaks or hazards [ ]
- Records gage and meter readings in station log [ ]
- Notifies supervisory personnel of malfunctioning machines or equipment [ ]
- Assists in operation of equipment [ ]
- Removes materials or products from machine, equipment or conveyor [ ]
- Cleans machine or equipment [ ]
- Connects or disconnects lines and hoses to or from machines or equipment [ ]
- Flushes out lines and equipment [ ]
- Assembles components into specified products [ ]
- Assists operator in processing materials or products [ ]
- Other (specify) [ ]

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Other Supervisory Personnel ☐
- Operators ☐
- Workers ☐
- Helpers ☐
- Laboratory Personnel ☐
- Quality Control Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical School ☐
- Vocational School ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

Related Subjects and Courses:

- Practical Arithmetic ☐
- Applied Science ☐
- Applied Chemistry ☐
- Properties of Materials ☐
- Processes of Industry ☐
- Materials of Industry ☐
- Production Analysis ☐
- Pneumatics ☐
- Industrial Instrumentation ☐
- Human Behavior ☐
- Elements of Supervision ☐
- Foremanship and Supervision ☐
- Formulas ☐
- Other (specify) ☐

Chemical Processing Unit Operator:

- Adhesives Technology ☐
- Quantitative Analysis ☐
- Instrumental Analysis ☐
- Organic Chemistry ☐
- Inorganic Chemistry ☐
- Chemical Technology ☐
- Heat Transfer ☐

- Principles of Polymerization
- Applied Chemistry of Plastics Materials
- Sources of Basic Materials for Plastics
- Properties of Thermoplasts
- Synthetic Elastomers
- Dies and Molds
- Thermo Jobbing Molding
- Injection Molding
- Blow Molding Processes
- Mass Transfer
- Transport Phenomena
- Other (specify)

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used

Machines:

Mixers and blenders:
- Banbury mixer
- Continuous processing mixer
- Tumbler mixer
  - Remote controlled tumbler barrels
- Rotary mixer
- Pelletizing mixer
- Screw type mixer
- Crutcher
- Paddle type blender
- Mulling machine
- Other (specify)

Crushers and grinding mills:

Crushers:
- Jaw crusher
- Hammermill

Grinding mills:
- Ball mill
  - Remote controlled ball mill
- Rod mill
- Pulverizing mill
- Other (specify)

Filter machines:
- Hydraulic filter machine
- Filter press
- Rotary leaf filter
- Plate and frame filter
- Vacuum pan filter
- Rotary vacuum drum filter
- Other (specify)

Presses:
- Hydraulic press
- Dehydrating press
- Extruder press
- Other (specify)

Sifters and screens:
- Agitator sifter
- Silk screen shaker
- Vibratory screens
- Sizing screens
- Other (specify)

Compressors:
- Gas compressors
- Air compressors
- Other (specify)

Miscellaneous machines:
- Beater cutter machines
- Blenders
- Centrifuges
- Pumps
- Vacuum pumps
- Slitting knives
- Roller machines
  - Calender roll mill
- Power saws
- Pulp machine
- Automatic scraper machine
- Seed cleaning machine
- Shredder machine
- Banding machine
- Swaging machine
- Primer press machine
- Sizing machine
- Grooving machine
- Casting machine
- Die casting machine
- Molding machine
- Centerless grinding machine
- Chamfering machine
- Loading machine
- Cutoff machine
- Embossing machine
- Filling machine
- Foiling machine
- Packing machine
- Crimping machine
- Knurling machine
- Screw machine
- Graining press machine

- Spray machine ☐
- Lubricating machine ☐
- Lacquering machine ☐
- Coating machine ☐
- Filament spinning machine ☐
- Other (specify) ☐

Tools:
- Wrenches ☐
- Bars ☐
- Screwdrivers ☐
- Pipe wrenches ☐
- Pliers ☐
- Other (specify) ☐

Equipment:
- Absorption equipment ☐
- Autoclaves ☐
- Clarifiers ☐
  - Setting tanks ☐
- Calciners ☐
- Concentrators ☐
  - Thickners ☐
- Condensers ☐
- Converters ☐
- Crystallizers ☐
  - Refrigerated crystallizers ☐
- Culturing equipment ☐
- Digestors ☐
- Dissolvers ☐
- Dehydrators ☐
- Diffusers ☐
- Distilling equipment: ☐
  - Fractionating towers ☐
  - Batch stills ☐
  - Continuous processing stills ☐
  - Semi-continuous processing stills ☐
- Driers:
  - Atmospheric driers:
    - Tunnel atmospheric driers ☐
    - Room atmospheric driers ☐
    - Cabinet atmospheric driers ☐
  - Rotary continuous driers ☐
  - Tunnel driers ☐
  - Vacuum drum driers ☐
  - Centrifugal driers ☐
  - Steam driers ☐
  - Hot water type driers ☐
  - Hot air type driers ☐
  - Spray driers ☐
- Evaporators ☐
- Granulators ☐
- Gas generators ☐
- Kettles:
  - Compounding kettles ☐
  - Steam jacketed kettles ☐
  - Mixer kettles ☐
- Heat exchangers ☐
- Vacuum pans ☐
- Furnaces:
  - Annealing furnaces ☐
  - Reduction furnaces ☐
  - Rotary furnaces ☐
- Kilns ☐
- Homogenizers ☐
- Hydrators ☐
- Impregnators ☐
- Liquefiers ☐
- Moisturizers ☐
- Nitrators ☐
- Polymerizers ☐
- Precipitators ☐
- Purifiers:
  - Extractor columns ☐
  - Grease extractors ☐
  - Solvent extractors ☐
  - Purification towers ☐
  - Gas scrubbers ☐
  - Oil scrubbers ☐
- Caustic wash units ☐
- Deoxidizers ☐
- Regenerators ☐
- Reactors:
  - Catalytic reactors ☐
  - Chemical reactor vats ☐
- Saturators ☐
- Separating equipment:
  - Acidulation tanks ☐
  - Gravity separators ☐
- Weighing scales:
  - Platform scales ☐
  - Balance scales ☐
  - Weighing hoppers ☐
  - Weighing tanks ☐
- Other (specify) ☐

Work Aids:
- Meters:
  - Hydrometer ☐
  - Calorimeter ☐
  - Salinometer ☐
  - Manometer ☐
  - Viscometer ☐
  - Titrometer ☐
  - Turbidimeter ☐
  - Ph meter ☐
  - Flowmeter ☐
  - Refractometer ☐
  - Other (specify) ☐

Manuals:
- Processing manuals ☐
- Equipment operation manuals ☐
- Safety manuals ☐
- Technical manuals ☐
- Other (specify) ☐

Schedules:
- Production schedules ☐
- Processing schedules ☐
- Work schedules ☐
- Other (specify) ☐

Specifications:
- Processing specifications ☐
- Material specifications ☐
- Product specifications ☐
- Other (specify) ☐

Formulas:
- Chemical material formulas ☐
- Compounding formulas ☐
- Product formulas ☐
- Other (specify) ☐

- Station logs ☐
- Production forms ☐
- Testing forms ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate type of product processed or manufactured.

Basic Industrial Chemicals:

Alkalines and chlorine:
- Caustic potash ☐
- Caustic soda ☐
- Sal soda ☐
- Sodium hydroxide ☐
- Other (specify) ☐

Industrial gases:
- Acetylene ☐
- Carbon dioxide ☐
- Dry ice ☐
- Helium ☐
- Hydrogen ☐
- Neon ☐
- Nitrogen ☐
- Other (specify) ☐

Cyclic chemicals:

Cyclic intermediates:
- Azobenzene ☐
- Napthol ☐
- Napthalene ☐
- Toulene ☐
- Tuluol ☐
- Other (specify) ☐

Cyclic coal tar crudes:
- Light oils ☐
- Coal tar ☐
- Coal tar acids ☐
- Creosote ☐
- Tar ☐
- Other (specify) ☐

Pigments:

Inorganic pigments:
- Bone black ☐
- Coloring pigments ☐
- Lampblack ☐
- Litharge ☐
- Redlead pigment ☐
- Zine oxide pigments ☐
- Other (specify) ☐

Organic pigments:
- Coloring pigments ☐
- Eosine toners ☐
- Food dyes and coloring ☐
- Lake red "C" toners ☐
- Other (specify) ☐

Dyes:
- Color lakes and toners ☐
- Acid dyes ☐
- Stilbene dyes ☐
- Nitro dyes ☐
- Other (specify) ☐

Non-cyclic organic chemicals:
- Acetone ☐
- Denatured alcohol ☐
- Citrates ☐
- Monosodium glutamate ☐
- Propylene ☐
- Other (specify) ☐

Industrial Inorganic Chemicals:
- Alums ☐

- Ammonia liquor ☐
- Boric acid ☐
- Brine ☐
- Metallic salts ☐
- Calcium peroxide ☐
- Rare earth metallic salts ☐
- Alkali metals ☐
- Boron compounds ☐
- Inorganic acids ☐
- Other (specify) ☐

Chemical based products:

Plastics materials:

- Polyesters ☐
- Casein plastics ☐
- Regenerated cellulose ☐
- Vulcanized fibers ☐
- Resins ☐
- Other (specify) ☐

Synthetic Rubber:

- Butadiene-styrene copolymers ☐
- Butyl rubber ☐
- Vulcanizible elastomers ☐
- Non-vulcanizable elastomers ☐
- Isobutylene-Isoprene rubbers ☐
- Isoprene rubbers ☐
- Polybutadiene rubbers ☐
- Silicone rubbers ☐
- Other (specify) ☐

Cellulosic man-made fibers:

- Acetate fibers ☐
- Rayon fibers ☐
- Cellulose fibers ☐
- Nitrocellulose fibers ☐
- Viscose fibers ☐
- Other (specify) ☐

Synthetic organic fibers:

- Acrylic fibers ☐
- Nylon fibers ☐
- Polyester fibers ☐
- Saran fibers ☐
- Vinyl chloride fibers ☐
- Other (specify) ☐

Biological drugs:

- Serums ☐
- Toxins ☐
- Vaccines ☐
- Venoms ☐
- Viruses ☐
- Other (specify) ☐

Medicinal chemicals, botanical drugs:

- Caffeine ☐
- Cocaine ☐
- Hormones ☐
- Menthol ☐
- Mercury compounds ☐
- Sulfa drugs ☐
- Other (specify) ☐

Pharmaceutical preparations:

- Antacids ☐
- Barbituates ☐
- Cold remedies ☐
- Cough medicines ☐
- Elixirs ☐
- Laxatives ☐
- Ointments ☐
- Suppositories ☐
- Tinctures ☐
- Other (specify) ☐

Soaps and detergents:

- Soap ☐
- Synthetic organic detergents ☐
- Inorganic alkaline detergents ☐
- Washing compounds ☐
- Other (specify) ☐

Speciality cleaning compounds:

- Household ammonia ☐
- Paint and wallpaper cleaners ☐
- Rug cleaners ☐
- Sweeping compounds ☐
- Other (specify) ☐

Polishing preparations:

- Automobile polishes ☐
- Floor waxes ☐
- Metal polishes ☐
- Furniture polishes ☐
- Other (specify) ☐

Sanitation preparations:

- House deodorants ☐
- Fly sprays ☐
- Insect powder ☐
- Household rat and ant poisons ☐
- Moth repellants ☐
- Other (specify) ☐

Surface active and finishing agents:

- Emulsifiers ☐
- Leather finishing agents ☐
- Wetting agents ☐

- Penetrants ☐
- Other (specify) ☐

Sulfonated oils and fats:
- Sulfonated greases ☐
- Soluble oils and greases ☐
- Sulfonated fats and greases ☐
- Other (specify) ☐

Perfumes, cosmetics, and toilet preparations:
- Bath salts ☐
- Colognes ☐
- Dentifrices ☐
- Deodorants ☐
- Face powders ☐
- Lipsticks ☐
- Shampoos ☐
- Perfumes ☐
- Other (specify) ☐

Paints, varnishes, and allied products:
- Calcimines ☐
- Enamels ☐
- Epoxy coatings ☐
- Paint driers ☐
- Paint removers ☐
- Paints ☐
- Primers ☐
- Putty ☐
- Varnishes ☐
- Lacquers ☐
- Other (specify) ☐

Gum and wood chemicals:
- Naval stores ☐
- Ethyl acetate ☐
- Hardwood distillates ☐
- Wood alcohol ☐
- Pine oil ☐
- Wood extracts ☐
- Wood tars and oils ☐
- Tanning extracts and materials ☐
- Other (specify) ☐

Agricultural chemicals:
- Organic fertilizers ☐
- Phosphate fertilizers ☐
- Plant foods ☐
- Agricultural pesticides ☐
- D.D.T. ☐
- Fungicides ☐
- Animal dips ☐
- Insecticides ☐
- Other (specify) ☐

Adhesives and gelatin:
- Cements ☐
- Sizes ☐
- Glue ☐
- Mucilage ☐
- Gelatin capsules ☐
- Other (specify) ☐

Explosives:
- Blasting powder ☐
- Dynamite ☐
- Fuses and detonators ☐
- Gunpowder ☐
- TNT ☐
- Nitroglycerin ☐
- Other (specify) ☐

Printing inks:
- Gravure inks ☐
- Duplicating inks ☐
- Lithographic inks ☐
- Printing inks ☐
- Screen processing inks ☐
- Other (specify) ☐

Miscellaneous products:
- Carbon black ☐
- Fatty acids ☐
- Essential oils ☐
- Bluing ☐
- Flares ☐
- Insulating compounds ☐
- Oil treating compounds ☐
- Fluxes ☐
- Ammunition ☐
- Plastic wood ☐
- Parting compounds ☐
- Signal flares ☐
- Fireworks ☐
- Waxes ☐
- Writing inks and fluids ☐
- Etching acids ☐
- Lanolin ☐
- Lighter fluids ☐
- Pyrotechnic ammunition ☐
- Distilled water ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

ECONOMICS AND POLITICAL SCIENCE WORK

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Plans, organizes, and conducts:
- Economic research and studies relating to:
  - Solving problems arising from production and distribution of goods and services ☐
  - Agricultural problems pertaining to exploitation of rural resources ☐
  - Production and marketing farm products ☐
  - Nature of money credit, and credit instruments ☐
  - Operation of banks, financial institutions and money exchanges ☐
  - Relationship between quantity of money, credit, and purchasing power ☐
  - Production, distribution, and use of goods ☐
  - Organizational structure of business concerns and its relationship to marketing and production methods ☐
  - Movement of goods and commodities between nations ☐
  - Exchange controls and operation of foreign exchanges ☐
  - Nature and effect of labor legislation on labor force ☐
  - Pricing theories ☐
  - Effect of taxes and fiscal policy on national income and overall business activity ☐
  - Distribution of tax load among taxpayers ☐
  - Market conditions in local, regional, and national areas ☐
  - Geographic phases of economic activities which affect demand of goods ☐
  - Other (specify) ☐
- Political research and studies relating to:
  - Origin, development, operation, and inter-relationships of political organizations ☐
  - Phenomena of political behavior ☐
  - Political philosophy and systematic theory ☐
  - Government institutions ☐
  - Public laws and administration ☐
  - Political party systems ☐
  - Creation of public opinion through communications media ☐
  - Relation of government and business ☐
  - International laws and relations ☐
- National and international problems involving areal characteristics and territorial policies affecting internal or external political relationships ☐
- Other (specify) ☐

Identifies and states nature, scope, and area of research ☐
Develops methods, techniques, and means of collecting data ☐
Directs and coordinates activities of research workers ☐
Organizes and conducts public opinion polls and surveys ☐
Compiles, analyzes, interprets, or evaluates data on:
- Prices and pricing practices on commodities ☐
- Labor supply and demand, wages and hours, and productivity ☐
- Factors influencing economic trends ☐

- Commodity market-trends relative to production and future consumption ☐
- Factors involved in production, distribution, and use of commodities ☐
- Effect of government regulations, restrictions or tariffs on:
  - National economy ☐
  - Industrial policy ☐
  - Foreign trade balances ☐
- International diplomacy, organization, and government ☐
- International conventions and congresses ☐
- Rules, principles, and cases in international law ☐
- Mandates and sanctions ☐
- Other (specify) ☐

Examines or investigates:

- Methods of financing, production costs and techniques, and marketing policies ☐
- Methods of lowering production and distribution costs ☐
- Farm credit structures and institutions ☐
- Banking methods and procedures ☐
- Foreign and domestic commodity exchange policies and practices ☐
- Agricultural transportation problems ☐
- Tariff and tax problems ☐
- Sources of government income and expenditures ☐
- Results of public opinion surveys and polls ☐
- Other (specify) ☐

Obtains data by consulting:

- Government officials ☐
- Personnel of civic bodies ☐
- Personnel of research agencies ☐
- Personnel of political parties ☐
- Other (specify) ☐

Develops or devises:

- Monetary policies to establish and maintain desirable balances ☐
- International trade policies to effect favorable trade balances ☐
- Economic reasons for trade restrictions ☐
- Policies of investment and transfer of capital ☐
- New taxes and methods of collection to eliminate tax inequalities ☐
- Methods to utilize maximum assets and develop potential markets ☐
- Arbitration and conciliation techniques to settle trade disputes ☐
- Plans to predict cost and success factors ☐
- Operations research methodology and mathematical formulations ☐
- Plans for establishing domestic and international monetary policies ☐
- Methods and policies for increasing efficiency of management and improving income ☐
- Efficient operating methods to improve farm policies of government agencies and farm associations ☐
- Agricultural policies to:
  - Increase efficiency of farm management ☐
  - Improve farm income ☐
  - Effect favorable agricultural legislation ☐
- Political theory ☐
- Financial institutional techniques for regulation of:
  - Lending rates ☐
  - Fixing of interest or discount rates ☐
- Other (specify) ☐

Forecasts:

- Labor trends ☐
- Economic trends ☐
- Direction and extent of price movements ☐
- Financial activities ☐
- Production and consumption of goods and crops ☐
- Political trends ☐
- Political activities ☐
- Other (specify) ☐

Acts as:

- Economic advisor or consultant to government agencies or industry ☐
- Arbitrator or conciliator in resolving labor-management problems ☐
- Political advisor to clients on policies ☐
- Other (specify) ☐

Advises governmental agencies and industry on:

- Economic problems affecting demand for goods as:
  - Potential markets ☐
  - Optimum trade routes ☐
  - Geographical features ☐
- Problems affecting:
  - Operating efficiency ☐

- Marketing methods ☐
- Fiscal problems ☐
- Labor problems ☐
- Businesses or groups on tax legislation and tax problems ☐
- Charges by government of unfair labor practices by unions ☐
- Petitions to have representatives for collective bargaining certified or decertified ☐
- Reapportionment of government legislative personnel ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Educational Personnel ☐
- Government Personnel ☐
- Agricultural Association Personnel ☐
- Industry Management Personnel ☐
- Diplomatic Personnel ☐
- Foreign Service Personnel ☐
- Research Personnel ☐
- Field Service Personnel ☐
- Policy Making Boards ☐
- International Trade Commissions ☐
- Scientific Personnel ☐
- Non-profit Organizational Personnel ☐
- Civic Organization Personnel ☐
- Research Assistants ☐
- Poll and Survey Workers ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training required.

- Agricultural Economics ☐
- Business Economics ☐
- Business Economics and Statistics ☐
- Economics ☐
- Econometrics ☐
- Business Statistics ☐
- Financial Economics ☐
- Government Economics ☐
- Industrial Economics ☐
- International Economics ☐
- Labor Economics ☐
- Managerial Economics ☐
- Economic Studies ☐
- Market Research Analysis ☐
- Operations Research ☐
- Operations Research and Statistics ☐
- Political Science ☐
- Diplomacy and World Affairs ☐
- Government ☐
- International Public Administration ☐
- International Relations ☐
- International Service ☐
- Poli Science/International Relations ☐
- Politics in International Relations ☐
- Other (specify) ☐

DEGREE

Record an "X" to indicate degree.

- BA ☐
- MA ☐
- PhD ☐
- MBE ☐
- MS ☐
- MFS ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

Economics:
- Principles of Economics ☐
- Fundamentals of Economics ☐
- Consumer Education ☐
- Microeconomic Theory ☐
- Money and Banking ☐
- Government and Business ☐
- Economics of Transportation ☐

- Public Utilities ☐
- Agricultural Economics ☐
- Regional Economics ☐
- Labor Economics ☐
- Economics of Health ☐
- Public Finance ☐
- State and Local Finance ☐
- Development of American Economic Institutions ☐
- Development of European Economic Institutions ☐
- Economic Development ☐
- Comparative Economic Systems ☐
- International Economics ☐
- Economic Statistics ☐
- History of Economic Thought ☐
- Business Cycles ☐
- Monetary and Fiscal Policy ☐
- Urban Economic Problems ☐
- Labor and the Law ☐
- Development of the Labor Movement ☐
- Social Insurance ☐
- Economics of Poverty ☐
- International Trade and Finance ☐
- Intermediate Income Price and Distribution Theory ☐
- Taxation, Government Finance and Fiscal Policy ☐
- State and Local Finance and Its Administration ☐
- Money, Credit, and Banking ☐
- Personal Income, Expenditures, Savings and Investment ☐
- International Economic Principles, Problems, and Policies ☐
- International Economic Integration ☐
- Urban and Regional Economics ☐
- Economics of Health and Human Resources ☐
- Economic History of Western Civilization ☐
- Comparative Economic Philosophies and Planning ☐
- Communist Economic Organization and Development ☐
- Economics of Industrial Organization ☐
- Economics of Less Developed Countries ☐
- Economic Fluctuations, Growth, and Forecasting ☐
- Economic Processes in the Rise and Fall of Civilizations ☐
- Computer Applications in Economics ☐
- Introduction to Mathematical Economics and Econometrics ☐
- Introduction to Macro and Micro Economic Theory ☐
- Economic Issues and Policies ☐
- Public Finance and Taxation ☐
- Public Expenditures ☐
- Labor Legislation and Contracts ☐
- International Economic Theory and Practice ☐
- Pure Theory of International Trade ☐
- Urban, Regional, and Resources Economics ☐
- Economics of the Communist Bloc ☐
- Problems of Underdeveloped Countries ☐
- Economic Development Planning ☐
- Economics of Growth and Development ☐
- Mathematical Economics and Statistics ☐
- National Income Accounts ☐
- Econometrics ☐
- Econometrics of Planning and Development ☐
- Economic Research ☐
- Other (specify) ☐

Political Science:

- Introduction to Political Thought ☐
- American Political Thought ☐
- Contemporary Political Ideologies ☐
- Asian Political Theory ☐
- Elements of Roman Jurisprudence ☐
- Constitution Development, Rights ☐
- Constitution Development, Power ☐
- Modern Legal Systems ☐
- Jurisprudence ☐
- Introduction to International Politics ☐
- Introduction to International Law ☐
- International Organization and Administration ☐
- American Foreign Policy ☐
- Foreign Policies of the Major Powers ☐
- Soviet Foreign Policy ☐
- National Security Policies ☐
- Governments of Western Europe ☐
- Governments and Politics of Scandinavian Countries ☐
- Government and Policies of USSR ☐
- Governments of Eastern Europe ☐
- Governments and Politics of the Far East ☐
- Governments and Politics of Southeast Asia ☐
- Governments of South America ☐
- Inter-American Affairs ☐
- Governments and Politics in the Near and Middle East ☐
- Governments and Politics of Sub-Sahara Africa ☐

- The Politics of Development ☐
- The American Government ☐
- The American Presidency ☐
- State Government ☐
- Urban and Regional Political Systems ☐
- American Local Government, Its Organization and Problems ☐
- Political Parties ☐
- Public Opinion ☐
- The Legislative Process ☐
- Political Behavior ☐
- Introduction to Public Administration ☐
- Public Organization and Management ☐
- Administrative Justice and Lawmaking ☐
- Public Personnel Administration ☐
- Public Financial Administration ☐
- Local Planning Law and Administration ☐
- Comparative Public Administration ☐
- Research Methods in Political Science ☐
- Political Analysis ☐
- Theory Building in Political Science ☐
- Political Systems of Advanced Societies ☐
- Executives and Bureaucracies ☐
- Public Policies ☐
- American Diplomacy ☐
- European Diplomacy ☐
- International Relations of Latin America ☐
- Africa in International Affairs ☐
- Soviet Foreign Policy ☐
- World Communist Movements ☐
- Formulation of American Foreign Policy ☐
- Military Strategy and Foreign Policy ☐
- International Organization ☐
- Theory and Methodology in International Relationships ☐
- Science, Technology and Politics ☐
- International Communications Theory ☐
- Economic Analysis for International Relations ☐
- International Systems Analysis ☐
- Foreign Policy Analysis ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines and Equipment:

- Computers ☐
- Adding Machines ☐
- Calculators ☐
- Typewriters ☐
- Other (specify) ☐

Work Aids:

- Survey Data ☐
- Geographical Data ☐
- Census Data ☐
- Labor Supply Data ☐
- Research Data ☐
- Sales Data ☐
- Consumer Data ☐
- Gross National Product Data ☐
- Commodity Data ☐
- Commodity Exchange Data ☐
- Tariff Data ☐
- Market Research Data ☐
- Market Trend Data ☐
- International Trade Data ☐
- Statistical Data ☐
- Operations Research Data ☐
- Agricultural Data ☐
- Intelligence Data ☐
- Economic Forecast Data ☐
- Balance of Trade Data ☐
- Credit Data ☐
- Interest Data ☐
- Investment Data ☐
- Tax Data ☐
- Industrial Accident Data ☐
- Other (specify) ☐

Laws:

- Public Laws ☐
- Labor Laws ☐
- Industrial Accident Laws ☐
- Tariffs ☐
- Insurance Laws ☐
- International Laws ☐
- Social Insurance Laws ☐
- Tax Laws ☐
- Other (specify) ☐

Reports:

- Consumer Reports ☐
- Financial Statements ☐
- Annual Reports ☐
- Other (specify) ☐

International Trade Agreements:

- Fiscal Policy ☐

- Tax Policy ☐
- Price Indexes ☐
- Foreign Policy ☐
- Government Regulations ☐
- Surveys ☐
- Opinion Polls ☐
- Credit Instruments ☐
- Statistical Tables ☐
- Slide Rules ☐
- Political Polls ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

ELECTRICAL EQUIPMENT, APPARATUS, AND DEVICES MANUFACTURING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with manufacturing of:
- Electric power:
  - Generators and components ☐
  - Distribution transformers ☐
  - Specialty transformers ☐
  - Storage batteries ☐
    - Wet cell ☐
    - Dry cell ☐
  - Switchgear ☐
  - Switchboard apparatus ☐
- Electric motors and motor components ☐
- Electrical:
  - Industrial apparatus and components ☐
  - Industrial controls ☐
  - Household appliances and housewares ☐
  - Lighting and wiring products ☐
  - Communication equipment ☐
  - X-ray equipment ☐
  - Equipment for internal combustion engines ☐
- Electromedical equipment ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Fabricating parts used in manufacturing of products ☐
- Assembling parts into subassemblies or final product ☐
- Installing electrical systems used for operating machines, machinery, and instruments ☐
- Inspecting parts, assemblies, and products ☐
- Testing assemblies and products ☐
- Calibrating or adjusting operation of products ☐
- Reworking defective or malfunctioning assemblies or products ☐
- Other (specify) ☐

Plans:
- Manpower requirements ☐
- Work schedules ☐
- Production schedules ☐
- Assembly procedures ☐
- Training of workers ☐
- Inspection procedures ☐
- Testing procedures ☐

Prepares work schedules ☐

Assigns workers to specific duties ☐

Gives work directions to workers concerning assigned duties ☐

- Inspects work for conformance with specifications ☐
- Interprets production orders, specifications, drawings, and technical data for workers ☐
- Advises workers on methods and procedures for solving work problems ☐
- Enforces worker compliance with established work procedures, regulations and safety rules ☐
- Evaluates worker performance ☐
- Recommends personnel actions, such as promotions, discharges, and disciplinary actions ☐
- Requisitions materials, tools, and equipment ☐
- Keeps production and worker performance records ☐
- Prepares report on production activities ☐
- Trains workers in:
  - Setting up and operating machines and equipment ☐
  - Subassembly methods and procedures ☐
  - Final assembly methods and procedures ☐
  - Inspection methods and procedures ☐
  - Repair or rework on assemblies and products ☐
- Coordinates:
  - Department activities with activities of other departments ☐
  - Worker activities ☐
- Other (specify) ☐

- Reviews, reads, or analyzes:
  - Production specifications ☐
  - Production orders ☐
  - Assembly specifications ☐
  - Blueprints ☐
  - Inspection reports ☐
  - Testing reports ☐
  - Rework orders ☐
  - Other (specify) ☐

- Determines:
  - Material requirements ☐
  - Parts requirements ☐
  - Machine setups ☐
  - Jigs, fixtures, and holding devices required ☐
  - Subassembly methods and procedures ☐
  - Final assembly methods and procedures ☐
  - Inspection requirements ☐
  - Testing requirements ☐
  - Other (specify) ☐

- Sets up machine for operation by other workers ☐
- Sets up and operates machines ☐
- Controls operation of automatic machines ☐
- Controls equipment to process materials ☐
- Tends preset-up automatic machines ☐
- Feeds materials into machines or equipment ☐
- Offbears parts or products from machines or conveyors ☐
- Other (specify) ☐

- Installs, alines, and secures in machine or equipment:
  - Die casting molds ☐
  - Die sets ☐
  - Rolls ☐
  - Stops ☐
  - Guides ☐
  - Holding fixtures ☐
  - Cutters ☐
  - Workpiece ☐
  - Extrusion nozzles ☐
  - Spacers ☐
  - Marking wheels ☐
  - Revolving heads ☐
  - Take up reels ☐
  - Coils or rolls of material ☐
  - Welding electrodes ☐
  - Other (specify) ☐

- Threads material through:
  - Rollers ☐
  - Guides ☐
  - Hold downs ☐
  - Fabricating unit ☐
  - Forming unit ☐
  - Other (specify) ☐

- Sets controls for specified:
  - Temperature ☐
  - Pressure ☐
  - Vacuum ☐
  - Timing cycle ☐
  - Flow rates ☐
  - Machine fabricating operations ☐
  - Product forming operations ☐
  - Product processing operations ☐
  - Other (specify) ☐

- Performs trial run on machine to verify setup ☐
- Moves levers and controls to:
  - Start machine or equipment ☐

- Maintain specified tension on materials ☐
- Reset guides, stops, or tool position ☐
- Adjust operation of machine or equipment ☐
- Fabricate product or part ☐
- Process product or part ☐
- Stop machine or equipment ☐
- Other (specify) ☐

Observes:
- Machine or equipment operation ☐
- Panelboard readings ☐
- Gages and meters ☐
- Products produced for defects ☐
- Action of electrical products tested ☐
- Other (specify) ☐

Fabricates parts or products, using hand or power tools and measuring instruments ☐

Lays out:
- Reference lines or points ☐
- Material cutting lines ☐
- Locations for drilling holes ☐
- Wiring pattern ☐
- Wiring diagram ☐
- Other (specify) ☐

Drills, reams, or taps holes for mounting or assembly of:
- Components of products ☐
- Subassemblies ☐
- Controls ☐
- Gages ☐
- Meters ☐
- Instruments ☐
- Panelboards ☐
- Switchboards ☐
- Other (specify) ☐

Assembles parts, assemblies, or final product by:
- Placing part in holding device or fixture ☐
- Fitting parts together ☐
- Setting clearances specified between parts ☐
- Pressing bushings, pinions, or couplings on shafts ☐
- Shrinking bushings on shaft, using heat ☐
- Alining parts ☐
- Fastening or securing parts or assemblies in place using:
  - Screws ☐
  - Pins ☐
  - Bolts and nuts ☐
  - Rivets ☐
  - Clamps ☐
  - Hangers ☐
  - Cotter keys ☐
  - Welds ☐
  - Soldering iron or gun ☐
  - Brazes ☐
  - Plastic compounds ☐
  - Other (specify) ☐

Cutting:
- Insulating materials to specific size ☐
- Wire to specified lengths ☐
- Tubing or piping to specified lengths ☐
- Other (specify) ☐

Inserting:
- Insulating material between:
  - Commutator slots ☐
  - Plates of storage batteries ☐
  - Appliance panels ☐
  - Wires into terminals or connectors ☐
- Plates in cases of storage batteries ☐
- Other (specify) ☐

Bending:
- Contacts or points into specified position ☐
- Parts to prevent short circuits between electrical parts ☐
- Tubing into specified contour for installation ☐
- Structural parts of appliances to obtain specified alinement and fit ☐
- Armatures to obtain specified straightness ☐

Fitting:
- Carbon brushes to curve of commutator ☐
- Stator coils to housing ☐
- Bearings to shafts or journals ☐
- Other (specify) ☐

Stripping insulating material from wiring ☐

Wrapping insulating material around coils ☐

Dipping products into materials to seal or cover them ☐

Connecting:
- Wiring to specified:
  - Controls ☐
  - Terminals ☐
  - Switches ☐
  - Assemblies ☐

- Timers ☐
- Panelboards ☐
- Switchboards ☐
- Switching gear ☐
- Leads to battery terminals ☐
- Piping or tubing specified to pumps or inlets ☐
- Electrical assemblies or products to testing equipment ☐
- Other (specify) ☐

- Packing grease cups ☐
- Lubricating bearings ☐
- Wrapping wire around mica to form heating coils ☐
- Placing and securing plates or housings on products ☐
- Other (specify) ☐

Inspects:
- Materials or products for:
  - Surface defects ☐
  - Coating defects ☐
- Assemblies for:
  - Quality of workmanship ☐
  - Completeness and accuracy of assembly ☐
  - Fit and relationship of parts ☐
  - Loose and broken connections ☐
  - Alinement of parts ☐
  - Conformance with sample assembly ☐
  - Binding of moving parts ☐
  - Other (specify) ☐

Measures:
- Materials or products for conformance with dimensional specifications ☐
- Plating or coating thicknesses on materials and parts ☐
- Clearances between moving parts of electrical contacts ☐
- Other (specify) ☐

Tests part, assembly, or product by:
- Setting controls for specified:
  - Temperature ☐
  - Current or voltage ☐
- Starting test equipment and observing:
  - Readings on gages of testing equipment ☐
  - Readings on product under test ☐
  - Action of assembly or product for specified performance ☐
  - Gages and meters for electrical characteristics ☐
  - Evidences of malfunctioning ☐
- Analyzing test data to determine cause of malfunction ☐
- Recording nature and type of defects in log ☐
- Other (specify) ☐

Calibrates products by:
- Adjusting calibration screws ☐
- Resetting tensions on springs ☐
- Resetting temperature indicators ☐
- Bending electrical contacts for specified clearances ☐
- Other (specify) ☐

Prepares orders for reworking:
- Parts having surface defects ☐
- Malfunctioning assemblies or products ☐
- Parts not meeting dimensional specifications ☐
- Other (specify) ☐

Reworks:
- Parts to remove defects by:
  - Filing ☐
  - Grinding ☐
  - Scraping ☐
  - Lapping ☐
  - Truing ☐
  - Straightening ☐
  - Rewiring parts ☐
  - Securing loose connections ☐
- Assemblies and products by:
  - Disassembling unit or product ☐
  - Examining parts, connections, and assembly for defect ☐
  - Measuring clearances between parts or contacts ☐
  - Removing and replacing defective parts ☐
  - Soldering loose connections ☐
  - Reassembling unit or product ☐
  - Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Engineering Personnel ☐
- Inspection Personnel ☐
- Testing Personnel ☐

- Supervisors ☐
- Other Supervisors ☐
- Workers ☐
- Helpers ☐
- Assembly Line Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical School ☐
- Vocational School ☐
- Military Training ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop a worker's skills.

- Mathematics ☐
- Applied Physics ☐
- Algebra ☐
- Care and Use of Hand Tools ☐
- Care and Use of Power Tools ☐
- Basic Electricity ☐
- Component Recognition:
  - Physical Appearance ☐
  - Schematic Symbolization ☐
  - Prefixes Used for Electrical Units ☐
- Electrical Measuring Devices:
  - Ammeter ☐
  - Voltmeter ☐
  - Ohmmeter ☐
  - Multimeter ☐
- Protective Devices:
  - Fuses ☐
  - Circuit Breakers ☐
  - Overload Relays ☐
  - Interlock Switches ☐
- Electrical Resistance ☐
- Ohm's Law ☐
- Electrical Circuits:
  - Series ☐
  - Parallel ☐
  - Series-Parallel Combination ☐
- Types of Magnets ☐
- Magnetic Force ☐
- Magnetic Fields ☐
- Shapes and Uses of Magnets ☐
- Electromagnetism:
  - Magnetic Field Around Conductor ☐
  - Left Hand Rule ☐
  - Field Between Two Conductors ☐
  - Magnetic Circuits ☐
  - Induction ☐
- Power Sources:
  - Dry Cells ☐
  - Storage Cells ☐
  - Batteries ☐
  - Rectified AC Power Supply ☐
- DC Circuit Analysis:
  - Kirchoff's Law ☐
  - Application to Series Circuits ☐
  - Application to Parallel Circuits ☐
  - Application to Series-Parallel Circuits ☐
- DC Machinery:
  - DC Motors:
    - Series Wound ☐
    - Shunt Wound ☐
    - Compound Wound ☐
    - Universal Wound ☐
  - DC Generators:
    - Series ☐
    - Shunt ☐
    - Compound ☐
    - Armature Construction ☐
    - Field Testing ☐
- Introduction to AC Current:
  - Instantaneous Value of AC ☐
  - Peak, Average, and Effective Value of AC ☐
  - Phase Relationship to Voltage and Current ☐
- Inductance, Reactance and Impedance:
  - Fundamentals of Inductance ☐
  - Voltage and Current Relationship ☐
  - Series Inductance-Resistance Relationship ☐
  - Parallel Inductance-Resistance Relationship ☐
  - Effect of Frequency Changes on Reactance ☐
- Capacitive Reactance and Impedance ☐
  - Fundamentals of Capacitance:
  - Voltage and Current Relationship ☐
  - Series and Parallel RC Circuits ☐

AC Circuits:
- Series RLC Circuits ☐
- Parallel RLC Circuits ☐
- Power in AC Circuits ☐

Transformer Theory and Application:
- Theory of Transformer Actions ☐
- Turns Ratio ☐
- Impedance Matching ☐
- Transformer Losses ☐
- Transformer Ratings ☐
- Power Transformers ☐
- Instrument Transformers ☐
- Specialty Transformers ☐

- Principles of AC Machinery ☐
- Principles of AC Generators ☐
- Principles of Induction Motors ☐
- Principles of Synchronous Motors ☐
- Principles of Single Phase Motors ☐
- Principles of Polyphase Motors ☐
- General Safety Precautions ☐
- Tools for Drilling, Tapping, Punching ☐
- Wire Connectors and Fasteners ☐
- Stripping, Splicing, and Soldering Wires and Connectors ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:
- Armature banding machines ☐
- Armature winding machines ☐
- Battery acid dumping machines ☐
- Battery acid bottling machines ☐
- Capping machines ☐
- Casting machines ☐
- Cell tube forming machines ☐
- Clinching machines ☐
- Coil taping machines ☐
- Coil winding machines ☐
- Conveyors ☐
- Core insulating machines ☐
- Coremaking machines ☐
- Crushers ☐
- Die casting machines ☐
- Drill presses ☐
- Dry cell battery machines ☐
- Electrode cleaning machines ☐
- Filling machines ☐
- Gettering filament machines ☐
- Lathes ☐
- Lamination stacking machines ☐
- Lead burning machines ☐
- Light bulb forming machines ☐
- Mixing machines ☐
- Mills ☐
- Pasting machines ☐
- Plate stacking machines ☐
- Plug wiring machines ☐
- Screening and blending machines ☐
- Spun paste machines ☐
- Spraying machines ☐
- Undercut saw machines ☐
- Wire stranding machines ☐
- Wire twisting machines ☐
- Wrapping machines ☐
- Other (specify) ☐

Tools:
- Wrenches ☐
- Screwdrivers ☐
- Files ☐
- Pliers ☐
- Diagonals ☐
- Wire hooks ☐
- Picks ☐
- Scribers ☐
- Wirecutters ☐
- Scissors ☐
- Hammers ☐
- Brushes ☐
- Wirestrippers ☐
- Tube benders ☐
- Pipe wrenches ☐
- Soldering iron ☐
- Soldering gun ☐
- Leather mauls ☐
- Acetylene torch ☐
- Crimping tools ☐
- Staking tools ☐
- Tweezers ☐
- Flaring tools ☐
- Scrapers ☐
- Other (specify) ☐

Equipment:
- Heat treating ☐
- Tempering ☐
- Annealing ☐
- Ovens ☐
- Furnaces ☐
- Driers ☐
- Scales ☐
- Welding equipment ☐
- Encapsulating equipment ☐
- Other (specify) ☐

Work aids:
- Measuring devices:
  - Balance gage ☐
  - Dial indicator ☐
  - Feeler gage ☐
  - Thickness gage ☐
  - Thread gage ☐
  - Gage blocks ☐
  - Micrometers ☐
  - Straight edges ☐
  - Depth gages ☐
  - Shadowgraph ☐
  - Meters:
    - Potentiometers ☐
    - Manometer ☐
    - Frequency meter ☐
    - Ammeter ☐
    - Voltmeter ☐
    - Multimeter ☐
    - Thermometer ☐
    - Hydrometer ☐
  - Other (specify) ☐

  - Loupes ☐
  - Oscilloscopes ☐
  - Oscillographs ☐
  - Electrical test stands ☐
  - Bridge gages ☐
  - Calibrating equipment ☐
  - Magnifying glasses ☐
  - Binocular microscopes ☐
  - Material testing equipment ☐
  - Other (specify) ☐

  - Acceptance slips ☐
  - Approval slips ☐
  - Rejection slips ☐
  - Blueprints ☐
  - Engineering drawings ☐
  - Wiring harness boards ☐
- Inspection orders ☐
- Inspection reports ☐
- Production orders ☐
- Production reports ☐
- Formulas ☐
- Assembly specifications ☐
- Sample assemblies ☐
- Holding devices ☐
- Fixtures ☐
- Jigs ☐
- Schedules ☐
- Calibration standards ☐
- Salvage reports ☐
- Rework orders ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate electrical equipment, apparatus, or devices manufactured.

Electric Motors and Generators:
- Armatures ☐
- Coils ☐
- Collector rings ☐
- Converters:
  - Frequency ☐
  - Phase ☐
  - Rotary ☐
- Dynamotors ☐
- Dynamos ☐
- Exciter assemblies ☐
- Generating apparatus and parts ☐
- Generator sets:
  - Gasoline ☐
  - Diesel ☐
  - Dual fuel ☐
- Inverters ☐
- Motors ☐
- Power generators ☐
- Railway motors and control equipment ☐
- Resolvers ☐
- Rotor retainers and housings ☐
- Rotors ☐
- Servo motors ☐
- Slip rings ☐
- Starters ☐
- Synchronous condensers and timing motors ☐
- Synchros ☐
- Torque motors ☐
- Other (specify) ☐

Transmission and Distribution Equipment:
- Power, Distribution, and Specialty:
  - Transformers ☐
  - Autotransformers ☐
  - Control transformers ☐
  - Distribution transformers ☐
  - Electric furnace transformers ☐
  - Feeder voltage regulators and boosters ☐
  - Generator voltage regulators:
    - Electric induction type ☐
    - Step type ☐

- Ignition transformers ☐
- Instrument transformers ☐
- Lighting transformers ☐
- Line voltage regulators ☐
- Luminous tube transformers ☐
- Machine tool transformers ☐
- Ratio transformers ☐
- Rectifier transformers ☐
- Regulators:
  - Transmission voltage regulators ☐
  - Distribution voltage regulators ☐
- Signalling transformers ☐
- Toy transformers ☐
- Tripping transformers ☐
- Voltage regulating transformers ☐
- Other (specify) ☐

Switchgear and switchboard apparatus:

- Busbar structures ☐
- Circuit breakers:
  - Air ☐
  - Power ☐
- Control panels ☐
- Distribution boards ☐
- Distribution cutouts ☐
- Fuse clips and blocks ☐
- Fuse devices (600 volts and over) ☐
- Fuse mountings ☐
- Fuses ☐
- Generator control and metering panels ☐
- Knife switches ☐
- Metering panels ☐
- Panelboards ☐
- Power connectors ☐
- Power switching equipment ☐
- Time switches ☐
- Other (specify) ☐

Electrical Industrial Equipment-Apparatus:

- Battery chargers ☐
- Blasting machines ☐
- Capacitors ☐
- Condensers:
  - Fixed ☐
  - Variable ☐
  - Motor ☐
  - Generator ☐
- Carbon and graphite products:
  - Brush blocks ☐
  - Brushes and brush block contacts ☐
  - Electrical carbon specialties ☐
  - Electric carbons ☐
  - Electrodes:
    - Thermal electrodes ☐
    - Electrolytic electrodes ☐
  - Lighting carbons ☐
- Fuel cells (electro-chemical generator) ☐
- Industrial controls:
  - Armature relays ☐
  - Electromagnetic:
    - Brakes ☐
    - Clutches ☐
  - Motor controls ☐
  - Positioning controls ☐
  - Relays ☐
  - Solenoid switches ☐
  - Timing apparatus ☐
  - Industrial electric truck controls ☐
  - Inverters (non-rotating) ☐
  - Mercury arc rectifiers ☐
  - Power converters (AC to DC) ☐
    - Static type ☐
    - Electric type ☐
  - Rectifiers ☐
  - Series capacitors ☐
  - Static elimination equipment ☐
  - Thermo-electric generators ☐
- Welding Equipment and Apparatus:
  - Arc welders ☐
  - Arc welding generators ☐
  - Electrode holders ☐
  - Electrodes ☐
  - Resistance welders ☐
  - Seam welding apparatus ☐
  - Spot welding apparatus ☐
  - Other (specify) ☐

Household Appliances:

- Electrical cooking equipment ☐
- Dishwashers ☐
- Floor waxers and polishers ☐
- Freezers:
  - Home ☐
  - Farm ☐
- Garbage disposals ☐
- Refrigerators ☐
- Sewing machines ☐
- Vacuum cleaners ☐
- Water heaters ☐
- Laundry appliances:
  - Driers ☐
  - Ironers ☐
  - Washing machines ☐
- Trash compacters ☐
- Other (specify) ☐
- Electrical Housewares and Fans:
  - Blenders ☐
  - Broilers ☐
  - Casseroles ☐
  - Chafing dishes ☐

- Coffee makers ☐
- Corn poppers ☐
- Dehumidifiers ☐
- Electric blankets ☐
- Fans:
  - Ventilating fans ☐
  - Exhaust fans ☐
  - Circulating fans ☐
- Food mixers ☐
- Griddles ☐
- Grills ☐
- Heating pads ☐
- Hot plates ☐
- Juice extractors ☐
- Knives ☐
- Roasters ☐
- Teakettles ☐
- Vaporizers ☐
- Waffle irons ☐
- Other (specify) ☐

Electric Lighting and Wiring Equipment:

- Electric lamps:
  - Electric light bulbs ☐
  - Electrotherapeutic lamps ☐
  - Flash bulbs ☐
  - Glow lamps ☐
  - Photoflash and photoflood lamps ☐
  - Sealed beam lamps ☐
  - Strobotrons ☐
- Current carrying devices:
  - Bus bars ☐
  - Caps and plugs ☐
  - Connectors ☐
  - Contacts ☐
  - Cutouts ☐
  - Circuit breakers ☐
  - Fluorescent starters ☐
  - Lightning arrestors ☐
  - Plugs ☐
  - Sockets ☐
  - Switches:
    - Snap ☐
    - Mercury ☐
    - Other (specify) ☐

Communication Equipment Apparatus:

- Carrier equipment ☐
- Communication headgear ☐
- Data sets ☐
- Electronic secretary ☐
- PBX equipment ☐
- Telegraph station equipment ☐
- Telegraph office switching equipment ☐
- Telephone central office equipment ☐
- Telephone sets ☐
- Telephone station equipment ☐
- Teletypewriters ☐
- Telewriters ☐
- Other (specify) ☐

X-ray Equipment:

- Fluoroscopic ☐
- Radiographic ☐
- Therapeutic ☐
- X-ray tubes ☐
- Other (specify) ☐

Electromedical Equipment:

- Electrocardiographs ☐
- Electroencephalographs ☐
- Electrotherapeutic apparatus ☐
- Other (specify) ☐

Electrical Equipment for Internal Combustion Engines:

- Alternators ☐
- Automobile ☐
  - Armatures ☐
  - Coils ☐
  - Distributors ☐
  - Generators ☐
  - Ignition systems ☐
  - Ignition cable sets ☐
  - Starters ☐
  - Voltage regulators ☐
- Lighting systems ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐

- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

ELECTRONIC COMPONENTS, EQUIPMENT, AND APPARATUS MANUFACTURING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with manufacturing electronic:
- Communication equipment ☐
- Components and accessories ☐
- Detection or navigational equipment ☐
- Entertainment equipment ☐
- High energy equipment ☐
- Industrial equipment ☐
- Missile and space vehicle control equipment ☐
- Multi-purpose equipment ☐
- Semi-conductors and related devices ☐
- Signaling equipment ☐
- Television and radio equipment ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Fabricating:
  - Prototype or developmental electronic components ☐
  - Components for use in electronic equipment ☐
- Processing components or products ☐
- Assembling:
  - Electronic components ☐
  - Electronic components into subassemblies ☐
  - Electronic subassemblies into final product ☐
- Installing assemblies and hardware in chassis and packages ☐
- Inspecting components, assemblies, and products ☐
- Testing components, assemblies, and products ☐
- Calibrating components, assemblies, and products ☐
- Reworking defective components, assemblies, or products ☐
- Other (specify) ☐

Plans:
- Manpower requirements ☐
- Work schedules ☐
- Production schedules ☐
- Inspection schedules, methods, and procedures ☐
- Testing schedules, methods, and procedures ☐
- Assembly schedules, methods, and procedures ☐
- Worker training requirements ☐
- Prepares work schedules ☐
- Assigns workers specific duties ☐
- Gives work directions to workers concerning assigned duties ☐
- Inspects work for conformance with specifications ☐

- Interprets production orders, specifications, drawings, and technical data for workers ☐
- Advises workers on methods and procedures for solving work problems ☐
- Evaluates performance of workers ☐
- Recommends:
  - Changes and modifications in processes, fabrication, and assembly activities ☐
  - Personnel actions, such as promotions, discharges, and disciplinary actions ☐
  - Acquisition of tools, machinery, and equipment ☐
- Requisitions materials, tools, and equipment ☐
- Prepares reports on:
  - Production activities ☐
  - Testing activities ☐
  - Inspection activities ☐
- Trains workers in:
  - Setting up and operating machines and equipment to fabricate components ☐
  - Controlling equipment to process components ☐
  - Assembly methods, techniques and procedures ☐
  - Inspection methods and procedures ☐
  - Testing methods and procedures ☐
  - Reworking defective components, assemblies, and products ☐
- Coordinates:
  - Department activities with activities of other departments ☐
  - Flow of material, components, and assemblies among work stations ☐
  - Worker activities ☐
  - Other (specify) ☐

- Reviews, reads, or analyzes:
  - Product specifications ☐
  - Production orders ☐
  - Assembly specifications ☐
  - Blueprints ☐
  - Sample assemblies ☐
  - Inspection reports ☐
  - Test reports ☐
  - Rework orders ☐
  - Other (specify) ☐

- Determines:
  - Material requirements ☐
  - Components or assemblies required ☐
  - Machine and equipment setup ☐
  - Holding fixtures, jigs, and devices required ☐
  - Assembly sequences and procedures ☐
  - Inspection sequences and procedures ☐
  - Testing sequences and procedures ☐
  - Machine and equipment requirements ☐
  - Other (specify) ☐
- Sets up machines or equipment for other workers ☐
- Sets up and operates machines or equipment ☐
- Controls operation of automatic machines or equipment ☐
- Controls processing equipment ☐
- Tends preset machines or equipment ☐
- Feeds machines or equipment ☐
- Offbears materials, components, or products from automatic machines ☐
- Other (specify) ☐

- Installs, alines, and secures in machines or equipment:
  - Die sets ☐
  - Rolls ☐
  - Stops ☐
  - Guides ☐
  - Workpiece ☐
  - Coil winding arbor or mandrel ☐
  - Welding electrodes ☐
  - Other (specify) ☐

- Threads material through:
  - Rollers ☐
  - Guides ☐
  - Holddowns ☐
  - Tension devices ☐
  - Fabricating unit ☐
  - Forming unit ☐
  - Processing unit ☐
  - Other (specify) ☐

- Sets controls for specified:
  - Temperature ☐
  - Pressure ☐
  - Vacuum ☐
  - Timing cycle ☐
  - Voltage ☐
  - Current ☐
  - Fabricating operation ☐
  - Forming operation ☐
  - Processing operation ☐
  - Testing operation ☐
  - Other (specify) ☐

- Moves controls to:
  - Start machine or equipment ☐
  - Begin fabricating operations ☐
  - Begin processing operations ☐
  - Reset guides, stops or tension devices ☐

- Adjust operation for obtaining specified performance ☐
- Stop machine or equipment ☐
- Other (specify) ☐

Observes:
- Performance of machine or equipment for evidences of malfunctioning ☐
- Gages ☐
- Meters ☐
- Recording indicators ☐
- Other (specify) ☐

Fabricates, by hand, components used in electronic products ☐

Selects type and size of material specified for component ☐

Attaches end of wire to magnetic core, mandrel, or arbor ☐

Winds wire specified number of turns around core, mandrel, or arbor ☐

Removes wound coil from mandrel or arbor ☐

Examines coil for:
- Bends ☐
- Kinks ☐
- Cracks in coating ☐
- Concentricity ☐
- Spacing ☐

Straightens coil or turns of wire on core ☐

Cuts wire to obtain coil of specified length ☐

Wraps insulating material around core and winds next layer of wire on material ☐

Brushes epoxy or cement on coil and wraps tape over cement ☐

Measures coil thickness for conformance with specifications ☐

Other (specify) ☐

Assembles components, assemblies, or products:
- Obtains materials specified for assembly ☐
- Positions component or assembly in holding fixture, jig, or device ☐
- Fits components together following assembly specifications, diagram, or sample part ☐
- Insures that component or assembly meets specifications for:
  - Alinement ☐
  - Concentricity ☐
  - Clearance between parts ☐
- Straightens, re-alines, or bends components to meet specifications ☐
- Fastens components or assembly in place, using ☐
  - Nuts ☐
  - Bolts ☐
  - Screws ☐
  - Solder ☐
  - Epoxy materials ☐
  - Thermo-compression bonding ☐
  - Brazes ☐
  - Welds ☐
- Examines workpiece for defective fastening ☐
- Discards or routes defective components, assemblies, or products for rework or salvage ☐
- Routes acceptable components, assemblies, or products for inspection or testing ☐
- Other (specify) ☐

Installs and secures:
- Components in chassis ☐
- Glass-plate and picture mask on cabinet ☐
- Assemblies in product chassis, shell, or package ☐
- Hardware and accessories to finish assembly of product ☐
- Wiring harness ☐
- Other (specify) ☐

Computes:
- Variation in length of wire to obtain specified resistance ☐
- Trimming required on component to obtain specified resistance ☐
- Size of wire required for obtaining specified resistance ☐
- Differences in weight of coated and uncoated components ☐
- Other (specify) ☐

Inspects components, assemblies, or products for:
- Defective workmanship ☐
- Conformance with assembly specifications ☐
- Surface defects ☐
- Loose or broken parts, connections, or wiring ☐
- Quality of coating or plating ☐
- Other (specify) ☐

Measure:
- Thickness of coating or plating on materials or components ☐
- Components for conformance with dimensional specifications ☐
- Clearances between components ☐
- Other (specify) ☐

WHAT THE WORKER DOES—Continued

Tests components, assemblies, or products for:
- Continuity of circuitry ☐
- Specified voltage ☐
- Specified current ☐
- Electrical characteristics ☐
- Simulated operating parameters ☐
- Overload or over voltage conditions ☐
- Leakage ☐
- Gas ☐
- Shorts ☐
- Grading products according to test results ☐
- Conformance with operational specifications ☐
- Other (specify) ☐

Calibrates components or products by:
- Adjusting tuning circuits to obtain maximum signal response ☐
- Tuning receivers to obtain specified picture ☐
- Adding or cutting material from component to obtain specified resistance ☐
- Abrading material to obtain specified frequency ☐
- Other (specify) ☐

Reworks components, assemblies, and products:
- Disassembles defective unit ☐
- Replaces defective component ☐
- Reassembles unit ☐
- Routes unit for testing ☐
- Record nature of defect and repairs performed ☐
- Other (specify) ☐

Ages tubes to stabilize electrical characteristics ☐

Exhausts tubes to remove gases and other foreign matter ☐

Etches circuit boards ☐

Electroplates materials and products ☐

Heats components in furnace to:
- Remove moisture and impurities ☐
- Sinter fire metalized coatings ☐
- Braze parts together ☐
- Anneal parts ☐

Prepares solutions for cleaning, etching, and electroplating ☐

Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Quality Control Personnel ☐
- Engineering Personnel ☐
- Workers ☐
- Technicians ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirments.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical School ☐
- Military School ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop a worker's skills.

Trade related subjects:
- Mathematics ☐
- Applied Physics ☐
- Algebra ☐
- Trigonometry ☐
- Care and Use of Handtools ☐
- Care and Use of Power Tools ☐
- Care and Use of Measuring Devices ☐
- Care and Use of Testing Equipment ☐
- Basic Electricity ☐
- Component Recognition ☐
  - Physical Appearance ☐
  - Schematic Symbolization ☐
- Electrical Measuring Devices ☐

- Protective Devices ☐
- Electrical Resistance ☐
- Ohm's Law ☐
- Electrical Circuits ☐
- Types of Magnets ☐
- Magnetic Force ☐
- Magnetic Field ☐
- Shapes and Uses of Magnets ☐
- Electromagnetism ☐
- Electrostatics ☐
- Inductance ☐
- Capacitance ☐
- Network Analysis ☐
- Circuits and Resonance ☐
- Science, Matter, and Measurement ☐
- Sound Energy ☐
- Light Energy ☐
- Other (specify) ☐

Electronics:

- Transformer Principles ☐
- Electron Emission ☐
- Diode Construction ☐
- Diode Characteristics ☐
- Rectifier Circuits ☐
- Filter Circuits ☐
- Regulator Circuits ☐
- Triode Characteristics ☐
- Triode Amplifiers ☐
- Tetrode Amplifiers ☐
- Pentode Amplifiers ☐
- Paraphase Amplifier Circuits ☐
- Beam Power Amplifiers ☐
- Audio Power Amplifiers ☐
- Decibels ☐
- Microphones and Speakers ☐
- Oscillator Principles ☐
- Oscillator Circuits and Application ☐
- Transmitters ☐
- Antennas and Wave Propagation ☐
- Solid State Physics ☐
- Semiconductor Principles ☐
- PN Junction Rectifiers ☐
- Solid State Regulators ☐
- Two Junction Transistors ☐
- Integrated Circuitry ☐
- Communications ☐
- Radar Equipment ☐
- IFF Equipment ☐
- Electronic Countermeasures ☐
- Electronic Test Equipment ☐
- Sonar Systems ☐
- Radar Systems ☐
- Radar Power Supplies ☐
- Radar Receivers ☐
- Radar Transmitters ☐
- Radar Antennas and Transmission Lines ☐
- Servo Mechanisms ☐
- Transducers ☐
- Scanning Switches ☐
- Pre-amplifiers and Amplifiers ☐
- Sonar Indicators ☐
- Communication Receivers ☐
- Receiver Converter Equipment ☐
- Communication Transmitters ☐
- Antenna Tuners, Couplers, and Multicouplers ☐
- Planned Position Indicators ☐
- Interface Systems ☐
- Range Height Analysis ☐
- Linear System Analysis ☐
- Power Circuit Analysis ☐
- Microwaves ☐
- Network Synthesis ☐
- Network Theory ☐
- Computer Logic and Circuits ☐
- Feedback Control Systems ☐
- Industrial Electronics ☐
- Electronic Amplifiers ☐
- Computer Design ☐
- Lasers and Masers ☐
- Wave Guides and Resonators ☐
- Linear Active Circuits ☐
- Dielectrics ☐
- Semiconductor Devices ☐
- Theory of Semiconductors ☐
- Random Signals and Filter Theory ☐
- Electron Tube Theory ☐
- Transistor Circuits ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:

- Aperture masking machine ☐
- Ball bonding machine ☐
- Base filling machine ☐
- Bulb punch out machine ☐
- Cleaning machine ☐
- Coding machine ☐
- Eutric bonding machine ☐
- Grinders ☐
- Lapping machine ☐

- Glass lathe
- Leak detector machine
- Pin inserting machine
- Presses
  - Drill presses
  - Punch presses
  - Arbor presses
- Resistor trimming machine
- Spinning machine
- Spraying machine
  - Cathode spraying machine
- Pumps
  - Air pumps
  - Vacuum pumps
- Vacuum metalizing machine
- Tube flaring machine
- Stitch bonding machine
- Router
- Winding machine
  - Coil winding machine
  - Spade winding machine
  - Universal winding machine
- Other (specify)

Tools:

- Knives
- Spatulas
- Medicine dropper
- Soldering iron
- Soldering gun
- Tweezers
- Brushes
- Chassis punches
- Diagonal wire cutters
- Long nosed pliers
- Nut drivers
- Screwdrivers
- Wrenches
- Wire strippers
- Wire cutters
- Scissors
- Picks
- Files
- Rivet gun
- Tube nip-off gun
- Vacuum quill
- Other (specify)

Equipment:

- Ovens
- Furnaces:
  - Annealing furnaces
  - Carbonizing furnaces
  - Lehrs
  - Retort furnaces
  - Hydrogen furnaces
  - Diffusion furnaces
- Brazing equipment:
  - Radio frequency brazing equipment
  - Induction brazing equipment
- Radio frequency aging equipment
- Generators:
  - Signal generators
  - Power generators
- Tube bonding equipment
- Etching equipment
- Balance scales
- Photoengraving equipment
- Wave soldering equipment
- Tube exhausting pumping equipment
- Digital frequency counters
- Variable electronic filters
- Amplifiers
- Temperature compensation chambers
- Welders:
  - Heliare welders
  - Resistance welders
  - Tweezer welders
- Encapsulating equipment
- Other (specify)

Work aids:

- Mechanical measuring devices:
  - Go-no-go gage
  - Micrometers
  - Calipers
  - Dial indicators
  - Millimeter scale
- Electrical measuring devices:
  - Ohmmeters
  - Voltmeters
    - Digital voltmeters
  - Ammeter
  - Volt-ohmmeter
  - Vacuum-tube-voltmeter
  - Multimeter
  - Digital ohmmeter
  - Inductance bridge gage
  - Megger
  - Wave analyzer
  - Circuit analyzer
  - Wave form analyzer
  - Oscilloscopes
  - Galvanometer
  - Synchroscope
  - Wave meters
  - Wheatstone bridge
  - Milliammeters
- Optical instruments:
  - Optical comparator

- Optical pyrometer
- Microscope
- Optical interferometer
- Binocular microscope
- Toolmaker's microscope
- Other (specify)

Miscellaneous work aids:

- Templates
- Parts lists
- Scale charts
- Wiring diagrams
- Product specifications
- Testing schedules
- Sample parts
- Sample assemblies
- Magnifying glasses
- Silk screens
- Test data report forms
- Boats
- Engineering sketches
- Topological drawings
- Schematics
- Test probes
- Blueprints
- Job loaders
- Rework orders
- Inspection reports
- Pictorial blueprints
- Harness wiring boards
- Black light boxes
- Procedure manuals
- Wire lists
- Catalogs
- Color-code guides
- Process sheets
- Report forms
- Production reports
- Production schedules
- Inspection criteria sheets
- Quality assurance forms
- Slide rules
- Tube data cards
- Other (specify)

PRODUCTS

Record an "X" to indicate component, equipment, or device produced.

Communications equipment:

- Facsimile equipment
- Intercommunications equipment
- Laser systems and equipment
- Phototransmission equipment
- Pulsed electron guns
- Radio receiver networks
- Radio telegraph equipment
- Radio telephone equipment
- Other (specify)

Components and accessories:

- Absorbers
- Accelerators
- Actuators
- Adapters
- Alarms
- Amplifiers
- Analyzers
- Annunciators
- Antennas
- Antenuators
- Baluns
- Boards
- Breadboards
- Cables
- Capacitors

Cartridges:

- Magnetic tape
- Phonograph

Cavities microwave:

- Oscillating
- Amplifying

Chokes
Choppers
Chromotographs
Circuit boards
Coils
Commutators
Comparators
Condensers
Connectors
Consoles
Constant impedance transformers
Controls
Converters
Cooling units
Cores
Couplers
Crystal assemblies
Crystals

- Piezoelectric crystals

Decoders

- Delay lines:
  - Heat emission detectors ☐
  - Infra-red field detectors ☐
  - Light emission detectors ☐
  - Magnetic field detectors ☐
  - Ultra-violet-ray emission detectors ☐
- Door control devices:
  - Radio ☐
  - Photoelectric cell ☐
- Highway signals ☐
- Light and heat operating units ☐
- Loran equipment ☐
- Inertial guidance systems ☐
- Radio direction finders ☐
- Radio beacons ☐
- Radio compasses ☐
- Radiosondes ☐
- Sonar equipment ☐
- Avionic equipment ☐
- Air traffic control systems ☐
- Other (specify) ☐

Entertainment equipment:

- Audio systems ☐
  - Amplifiers:
    - Musical instrument ☐
    - Public address ☐
    - High fidelity ☐
  - Antennas ☐
    - Radio receiving:
      - Automobile ☐
      - Portable ☐
    - Television/frequency modulated:
      - Boosters ☐
      - Distribution systems ☐
      - Rotators ☐
  - Coin operated phonographs ☐
  - Home recorders:
    - Cassette ☐
    - Disc ☐
    - Tape ☐
  - Music operated:
    - Color systems ☐
    - Light displays ☐
    - Strobes ☐
  - Music and paging systems ☐
  - Phonograph:
    - Pick-up cartridges ☐
    - Record cutting styli ☐
    - Replacement styli ☐
    - Turntables ☐
  - Phonographs ☐
  - Public address systems ☐
  - Radio receiver sets ☐
  - Sound systems ☐
  - Sound reproducing systems ☐
  - Speaker monitors ☐
  - Speakers:
    - Electro dynamic ☐
    - Electrostatic ☐
    - Magnetic ☐
    - Pillow stereo ☐
  - Stereo earphones and accessories ☐
  - Stereo sets ☐
  - Tape players ☐
  - Tape recorders ☐
  - Television ☐
    - Home closed circuit system:
      - Recording system ☐
      - Playback system ☐
    - Receiving sets ☐
    - Remote control devices ☐
  - Televisions ☐
  - Tuners ☐
  - Other (specify) ☐

High energy equipment:

- Atom smashers ☐
- Betatrons ☐
- Cyclotrons ☐
- Linear accelerators ☐
- Particle accelerators ☐
- Other (specify) ☐

Industrial equipment ☐

- Electron beam:
  - Cutting machines ☐
  - Forming machines ☐
  - Welding machines ☐
- Precipitators ☐
- Ultrasonic:
  - Amplifiers ☐
  - Analyzers ☐
  - Cleaners ☐
  - Flaw detectors ☐
  - Generators ☐
  - Solderers ☐
  - Sterilizers ☐
  - Transducers ☐
  - Welders ☐
  - Other (specify) ☐
- Demagnetizers ☐
- Demodulators ☐
- Demonstrators ☐
- Detectors ☐
- Diplexers ☐
- Discriminators ☐
- Displays ☐
- Dividers ☐
- Duplexers ☐
- Echo boxes ☐

- Enclosures ☐
- Encoders ☐
- Filters ☐
- Fuses ☐
- Gunn effect devices ☐
- Harness assemblies ☐
- Headers ☐
- Impedance induction units ☐
- Indicators ☐
- Inductors ☐
- Inverters ☐
- Keyers ☐
- Magnetic recording tape ☐
- Magnets ☐
- Mixers ☐
- Modulators ☐
- Modules ☐
- Networks ☐
- Oscillators ☐
- Passive repeaters ☐
- Plotters ☐
- Power supplies ☐
- Printed circuits ☐
- Protectors ☐
- Pulse forming networks ☐
- Reactors ☐
- Recorders ☐
- Reflectors ☐
- Relays ☐
- Repeaters ☐
- Resonant reed devices ☐
- Rings ☐
- Scanners ☐
- Seals ☐
- Servos ☐
- Shifters ☐
- Shunts ☐
- Solenoids ☐
- Speakers ☐
- Stabilized klystron ☐
- Switches ☐
- Switching matrixes ☐
- Switching systems ☐
- Synchronizers ☐
- Synchros ☐
- Tape decks ☐
- Tapes ☐
- Tees ☐
- Terminal systems ☐
- Terminals ☐
- Terminations ☐
- Thermistors ☐
- Transducers ☐
- Tube parts ☐
- Tubes:
  - Cathode ray ☐
  - Ignition ☐
  - Image transfer ☐
  - Microwave:
    - Backward wave ☐
    - Crossed field ☐
    - Klystron ☐
    - Magnetron ☐
    - Traveling wave ☐
  - Noise source ☐
  - Photo tubes ☐
  - Power amplifying ☐
  - Rectifying:
    - Gas filled ☐
    - Vacuum ☐
  - Thyratron ☐
  - Transmitting ☐
  - X-ray ☐
- Tuners ☐
- Vacuum systems ☐
- Valves ☐
- Varistors ☐
- Vibrators ☐
- Voice controls ☐
- Wave guide assemblies ☐
- Wave guide structures ☐
- Other (specify) ☐

- Detection/Navigational equipment:
  - Countermeasures equipment ☐
  - Detection apparatus ☐
    - Electronic field detectors ☐
- Missile and space control equipment:
  - Missile control systems ☐
  - Missile fuel management systems ☐
  - Telemetry systems ☐
  - Other (specify) ☐

- Multi-purpose equipment ☐
  - Computers:
    - Analog computers ☐
    - Digital computers ☐
  - Digital encoders ☐
  - Cryogenic equipment ☐
  - Magnetic analysis equipment ☐
  - Oscilloscopes ☐
  - Television closed circuit:
    - Educational systems ☐
    - Industrial systems ☐
    - Medical systems ☐
    - Monitor systems ☐
  - Training devices:
    - Flight simulators ☐
    - Teaching machines ☐
    - Weapon simulators ☐
    - Other (specify) ☐

- Semiconductors and related devices ☐
  - Computer logic modules:
    - Emitter followers ☐
    - Flip flops ☐
    - Gates ☐
    - Inverters ☐
    - Magnetic:
      - Shifts ☐
      - Registers ☐
    - Registers ☐
  - Diodes:
    - Parametric diodes ☐
    - Tunnel diodes ☐
    - Variable capacitance diodes ☐
    - Zener diodes ☐
    - Hall effect devices ☐
  - Solid state devices:
    - Controlled rectifiers ☐
    - Diodes ☐
    - Fuel cells ☐
    - Infra-red sensors ☐
    - Light sensitive devices ☐
    - Modules ☐
    - Monolithic integrated circuits ☐
    - Nuclear detectors ☐
    - Photoelectric cells ☐
    - Photovoltaic devices ☐
    - Rectifiers ☐
    - Semi-conductor networks ☐
      - Integrated circuit transistors ☐
    - Strain gages ☐
    - Thermionic devices ☐
    - Thermoelectric devices ☐
  - Magnetohydrodynamic devices ☐
  - Transistors ☐
  - Other (specify) ☐

- Signaling equipment:
  - Control receivers ☐
  - Fire alarm systems ☐
  - Hydrophones ☐
  - Photographic control systems ☐
  - Underwater sound systems ☐
  - Other (specify) ☐

- Television and radio equipment:
  - Control room equipment ☐
  - Broadcasting equipment ☐
  - Instant replay equipment ☐
  - Color television tape equipment:
    - Recording equipment ☐
    - Reproducing equipment ☐
    - Monitoring equipment ☐
  - Kinescope equipment:
    - Recording equipment ☐
    - Reproducing equiment ☐
  - Transceivers ☐
  - Transmitting equipment ☐
  - Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

FABRICATED PLASTICS MANUFACTURING

Inventory

WHAT THE WORKER DOES

Below are listed activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates production activities concerned with:
- Manufacture of fabricated plastics products ☐
- Providing fabricated plastics components or products services on fee basis ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Setting up machines or equipment for fabricating plastics products ☐
- Setting up and operating plastics processing machines and equipment ☐
- Tending pre-setup plastics processing and fabricating machines ☐
- Hand-finishing plastics products ☐
- Laminating plastics to produce preforms of plastics products ☐
- Quality control of fabricated plastics components or products ☐
- Other (specify) ☐

Plans:
- Manpower requirements ☐
- Work schedules ☐
- Machine requirements ☐
- Production schedules ☐
- Production activities ☐
- Training for workers ☐
- Quality control procedures and practices ☐
- Other (specify) ☐

Prepares work schedules ☐
Assigns workers to duties ☐
Gives workers directions for performing assigned duties ☐
Interprets production orders, product specifications, and technical data for workers ☐
Inspects products for conformance with manufacturing specifications ☐
Enforces workers' compliance with work procedures, regulations, and safety rules ☐
Evaluates worker performance ☐
Advises workers on methods of solving work problems ☐
Recommends personnel action on workers ☐
Requisitions materials, tools, and work aids ☐
Keeps production and worker performance records ☐
Prepares reports on production activities ☐

Trains workers in:
- Performing assigned duties ☐
- Setup and operation of machines and equipment ☐
- Safety practices and regulations ☐

Coordinates:
- Department activities with activities of other departments ☐

- Worker activities ☐
- Other (specify) ☐

Studies or analyzes:
- Production orders ☐
- Product specifications ☐
- Sketches, diagrams, or blueprints ☐
- Quality control reports ☐
- Other (specify) ☐

Plans:
- Machine requirements ☐
- Work sequences ☐
- Hand operations required ☐
- Assembly procedures ☐
- Machining requirements ☐
- Finishing requirements ☐
- Quality control procedures and methods ☐
- Other (specify) ☐

Determines:
- Setup of machines ☐
- Type of plastics materials to be used ☐
- Type of molding methods to be used ☐
- Temperatures, pressures, and speed to be used during production
- Other (specify) ☐

Sets up automatic machines or machines for other workers ☐

Sets up and operates machines ☐

Operates or controls machine from panelboard or console ☐

Tends pre-setup or automatic machines ☐

Assists worker in operating machines or equipment ☐

Feeds materials into or offbears products from machines ☐

Other (specify) ☐

Installs, alines, and secures in machine:
- Molds ☐
- Cutting dies ☐
- Extrusion dies ☐
- Sizing rings ☐
- Stops ☐
- Guides ☐
- Jigs or holding fixtures ☐
- Other (specify) ☐

Sets controls for specified:
- Mold temperature ☐
- Preheating temperature ☐
- Pressure ☐
- Proportioning of materials ☐
- Dispensing of materials into molds ☐
- Rotational speed ☐
- Material dehumidifying temperature ☐
- Machine fabricating sequences ☐
- Speed of plungers or screws ☐
- Vacuum ☐
- Timing cycle of fabricating operations ☐
- Other (specify) ☐

Turns handwheels or moves controls to:
- Set length of hydraulic ram stroke ☐
- Control rewindup speed ☐
- Maintain specified tension or pull on materials ☐
- Adjust or regulate:
  - Vacuum ☐
  - Air pressure ☐
  - Sizing rings ☐
  - Material feed speed ☐
- Synchronize post forming or pull off speed with machine operations ☐
- Feed tools onto workpiece ☐
- Start or stop fabricating operations ☐
- Start machine to obtain sample product ☐
- Other (specify) ☐

Observes:
- Dials and gages for specified readings ☐
- Action of machine for evidences of malfunctioning ☐
- Other (specify) ☐

Examines molded or formed articles for defects, as:
- Blistering ☐
- Porosity ☐
- Mold sticking ☐
- Dull surface ☐
- Orange peel ☐
- Pitted surface ☐
- Clouded or segregated surface ☐
- Dimpled surface ☐
- Warps ☐
- Cracks ☐
- Burned marks ☐
- Thick flash ☐
- Other (specify) ☐

Measures article for conformance with dimensional specifications ☐

Tests articles for conformance with contract specifications ☐

Lays out on material:
- Pattern outlines ☐
- Template outlines ☐

WHAT THE WORKER DOES—Continued

- Cutting lines ☐
- Other (specify) ☐

Lays up fiber-glass and resin coated fabrics for molding plastic products:
- Cleans mold or form with solvents ☐
- Sprays form or mold with parting agents ☐
- Cuts material to specified size ☐
- Spreads compound over form and positions fabric on it ☐
- Rubs fabric with squeege to remove air bubbles ☐
- Applies additional layers of compound and fabric, as required ☐
- Trims edges of fabric and allows part to cure ☐
- Removes laminated product from form or mold ☐
- Other (specify) ☐

Casts plastic articles:
- Coats mold sections with parting agents ☐
- Assembles and secures sections of mold ☐
- Pours plastics compound in mold ☐
- Heats mold to cure article ☐
- Removes cured article from mold ☐
- Trims flash from article, using knife or power handtools ☐
- Other (specify) ☐

Repairs and maintains plastics molding machines:
- Observes action of machine to detect malfunction ☐
- Listens to operation of machine to locate malfunctioning ☐
- Disassembles machine or machine section and removes defective part ☐
- Repairs or replaces defective part and reassembles machine ☐
- Tests machine for specified operational performance ☐
- Other (specify) ☐

Performs tasks of unskilled nature in plastics fabrication plant:
- Removes molds from ovens ☐
- Removes castings from molds ☐
- Cleans molds ☐
- Strips stamped, sealed, or cut plastic bodies from panels ☐
- Colors products with vinyl inks ☐
- Fastens, glues, or cements parts of products together ☐
- Attaches metal parts to plastics products ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Other Supervisors ☐
- Workers ☐
- Helpers ☐
- Quality Control Personnel ☐
- Maintenance Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- College ☐
- Technical Training ☐
- Vocational Training ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop worker skills.

Trade related subjects and courses:
- Applied Mathematics ☐
- Basic Chemistry ☐
- Care and Use of Tools ☐
- Blueprint Reading ☐
- Estimating ☐
- Laboratory Procedures ☐
- Test Procedures ☐

- Human Relations ☐
- Principles of Supervision ☐
- Other (specify) ☐

Plastics:

- Introduction to Plastics:
  - Survey of Field of Plastics ☐
  - Trade Terminology ☐
  - Origins, Development, and Future of Plastics ☐
- Principles of Polymerization ☐
  - General Principles of:
    - Polymerization ☐
    - Polycondensation ☐
    - Polarity ☐
    - Colloidial Properties ☐
    - Crystallinity ☐
    - Determination of:
      - Molecular weights ☐
      - Viscosity ☐
- Applied Chemistry of Plastics Materials:
  - Chemical Structure of Synthetic Resins ☐
  - Nature of Plastics ☐
  - Linear and Cross-Linked Plastics ☐
- Sources of Basic Chemicals:
  - Coal ☐
  - Proteins ☐
  - Petroleum and Petroleum Gases ☐
  - Chemurgy ☐
  - Natural Resins ☐
- Synthetic Elastomers:
  - Synthetic Rubbers ☐
  - Isoprene ☐
  - Styrene Monomers ☐
  - Vinyl Acetylene ☐
  - Vulcanization ☐
  - Comparison of Properties of:
    - Butadiene Self Polymers ☐
    - Butyl Rubber ☐
    - Thioplasts ☐
- Manufacture and Processing of Plastics of:
  - Phenol-formaldehyde Molding Powders ☐
  - Urea-formaldehyde Molding Powders ☐
  - Polystyrene and Other Polymers ☐
  - Cellulose Acetate ☐
  - Cellulose Nitrate ☐
  - Process of Thermal Polymerization ☐
  - Emulsion Condensation ☐
- Properties of Thermoplasts:
  - Physical Properties ☐
  - Flow Properties ☐
  - Effect of Temperature on Physical Properties ☐
  - Fatigue Resistance ☐
  - Creep and Creep Recovery ☐
  - Effects of Solvents ☐
  - Resistance to Marring ☐
  - Related Properties ☐
- Properties of Thermosets:
  - Properties of Basic Thermosetting Materials ☐
  - Aspects of Fillers on Properties ☐
  - Effects of Cure ☐
  - Plasticity of Molding Procedures ☐
  - Strength-Weight Ratios ☐
- Dies and Molds:
  - Design of Molds ☐
  - Types of Materials for Molds ☐
  - Types of Molds ☐
  - Production of Molds ☐
  - Hobbing ☐
  - Electric deposition or Electro-forming of Molds ☐
- Shop Production Procedures:
  - Requirements of Shop Setup ☐
  - Hydraulic Supply Systems ☐
  - Hydraulic Presses ☐
  - Injection and Extrusion Presses ☐
  - Preparation of Materials ☐
  - Injection Molding ☐
  - Compression and Vacuum Molding ☐
  - Blow Molding ☐
  - Sheet Lamination ☐
  - Cast Resins ☐
  - Shop Inspection Practices ☐
- Extrusion Molding Practices ☐
  - Extrusion Molding of:
    - Tubes ☐
    - Sheet ☐
    - Profile Shapes ☐
  - Machine and Fixture Setup ☐
  - Machine Types ☐
  - Screw and Cylinder Construction ☐
  - Heater Elements ☐
  - Cooling Procedures ☐
  - Care and Maintenance of:
    - Machines ☐
    - Tools ☐
    - Work Areas ☐
- Compression Molding Practices:
  - Mold Setup ☐
  - Ejector mechanisms ☐
  - Molding of Parts ☐
  - Transfer molding ☐
  - Machine Types ☐
  - Heating Media ☐
  - Cooling Jigs ☐
  - Care and Maintenance of:
    - Tools ☐
    - Materials ☐

WHAT THE WORKER DOES—Continued

- Thermo-forming Practices:
  - Machines and Mold Forms ☐
  - Materials and Methods of Forming ☐
  - Vacuum Pumps ☐
  - Cutting and Edging ☐
  - Clamp Fixtures ☐
  - Preheater and Cooling Procedures ☐
  - Decorating Methods ☐
  - Scrap Grinding and Maintenance ☐
- Injection Molding:
  - Injection Molding of Thermoplastic Materials ☐
  - Machines, Molds, and Fixtures ☐
  - Heating and Cooling Methods ☐
  - Scrap Grinding ☐
  - Preheating ☐
  - Maintenance ☐
- Blow Molding Process:
  - Materials ☐
  - Press Types ☐
  - Molds and Dies ☐
  - Preheater Equipment ☐
  - Equipment for:
    - Tube Processing ☐
    - Sheet Blowing ☐
    - Bottle Shape Forming ☐
  - Machines, Die Care, and Maintenance ☐
- Reinforced Plastics:
  - Lay-up Work ☐
  - Pre-form Molding ☐
  - Filament Winding ☐
  - Glass Reinforcement ☐
  - Resins and Ancilla Materials ☐
  - Design and Construction of Tooling ☐
  - Pre-impregnation ☐
  - Heat Treatment ☐
  - Catalysts ☐
  - Fillers ☐
  - Core Materials ☐
- Foam Plastics Procedures:
  - Syntactic Type Foams ☐
  - Open and Closed Cell Forms ☐
  - Materials ☐
  - Densities ☐
  - Mixing Procedures ☐
  - Tooling ☐
- Honeycomb Structures:
  - Paper Honeycomb ☐
  - Fabric Honeycomb ☐
  - Metal Honeycomb ☐
  - Type of Structures and Uses ☐
  - Adhesive Bonding ☐
  - Welding ☐
  - Edge Sealing ☐
- Test Procedures:
  - Testing Principal Plastics ☐
  - Selection of Plastic Materials ☐
  - Methods of Forming ☐
  - Mechanical and Structural Properties in Plastics ☐
- Survey of Modern Plastics ☐
- Adhesives Technology ☐
- Plastics Technology ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, or work aids used.

- Machines and equipment:
  - Abrasive finishing and deflashing machines ☐
  - Bead screening machines ☐
  - Blender loading machines ☐
  - Blenders ☐
  - Blenders-homogenizers ☐
  - Blow molding machinery ☐
  - Blow molding deflashing machines ☐
  - Calenders ☐
  - Capping machines ☐
  - Casting machinery:
    - Film casting ☐
    - Resin casting ☐
    - Slush casting ☐
    - Vacuum casting ☐
  - Coating machinery and equipment:
    - Curtain coating machinery ☐
    - Dip coating machinery ☐
    - Electrostatic coating equipment ☐
    - Extrusion coating machinery ☐
    - Fluidized bed coating machinery ☐
    - Roller coating ☐
  - Coiling machines ☐
  - Compounding and mixing machinery:
    - Dry blenders ☐
    - Intensive mixers ☐
    - Liquid mixers ☐
    - Roll mills ☐
    - Tumbler mixers ☐
  - Compression molding machinery ☐
  - Continuous dipping line equipment ☐
  - Conveyors:
    - Pneumatic conveyors ☐
    - Vacuum conveyors ☐
    - Mechanical conveyors ☐

- Cooling equipment ☐
- Cooling and heating equipment ☐
- Cut-off machines ☐
- Decorating and marking machinery:
  - Embossing equipment ☐
  - Engraving machines ☐
  - Flock coating equipment ☐
  - Hot stamping machines ☐
- Labeling machines ☐
- Paint spraying systems ☐
- Printing systems ☐
- Silk screen equipment ☐
- Vacuum metalizing equipment ☐
- Degating equipment ☐
- Dicers ☐
- Die cutting presses ☐
- Dispensing machines ☐
- Drying and preheating equipment: ☐
  - Dehumidifiers ☐
  - Hopper drier preheaters ☐
  - Infra-red heating units ☐
  - Mold heating equipment ☐
  - Preheaters ☐
  - Vacuum driers ☐
- Extruder molding machinery ☐
- Fiber-glass roving cutters ☐
- Foam fabricating equipment ☐
- Foam molding machinery ☐
- Foam sheeting machines ☐
- Granulators ☐
- Grinders:
  - Ball Mills ☐
  - Pulverizers ☐
  - Scrap grinders ☐
- Heating and cooling equipment:
  - Chilling equipment ☐
  - Cooling towers ☐
  - Band heaters ☐
  - Rod and cartridge heaters ☐
  - Heat exchange systems ☐
  - Hot water and steam boilers ☐
- Injection molding machinery:
  - Combination plunger and screw system ☐
  - Plunger systems ☐
  - Screw systems ☐
- Irradiation equipment ☐
- Laboratory processing equipment ☐
- Laminating and impregnating machinery:
  - Impregnating equipment ☐
  - Thermoplastics laminating equipment ☐
  - Thermoset laminating equipment ☐
- Material Handling Systems Machinery:
  - Bulk materials handling systems ☐
  - Automatic weighing equipment ☐
  - Batch weighing equipment ☐
  - Dry materials proportioners ☐
  - Mechanical hopper loaders ☐
  - Pneumatic hopper loaders ☐
- Metering, proportioning, and dispensing machines ☐
- Particle reduction and sizing equipment:
  - Ball mills ☐
  - Knife cutting ☐
  - Pelletizers ☐
  - Shredders ☐
- Perforating machinery ☐
- Preforming machinery:
  - Preforming presses ☐
  - Vacuum forming equipment ☐
- Presses:
  - Drill presses ☐
  - Hot stamp foils ☐
  - Hot stamp presses ☐
  - Hydraulic presses ☐
- Rotational casting equipment ☐
- Sealing machines and equipment:
  - Die sealing ☐
  - Electronic sealing ☐
  - Electrical high frequency sealing ☐
  - Thermal sealing ☐
  - Ultrasonic sealing ☐
- Slitting machines ☐
- Static eliminating equipment ☐
- Take-off equipment:
  - Cooling bath equipment ☐
  - Cut-off machines ☐
  - Pull-off equipment ☐
  - Saws ☐
  - Vacuum sizers ☐
- Take-off systems:
  - Blown film take-off system ☐
  - Calendering take-off system ☐
  - Extrusion and laminating take-off system ☐
  - Flat film and sheeting take-off system ☐
  - Pipes and profiles take-off system ☐
  - Wire coating take-off system ☐
- Thermaforming systems:
  - Pressure forming systems ☐
  - Vacuum forming systems ☐
- Thermaset molding machines and equipment:
  - Autoclaves ☐
  - Compression presses ☐
  - Filament winding machines and equipment ☐
  - Glass fiber choppers ☐
  - Potting and encapsulating equipment ☐
  - Transfer presses ☐
- Vibrators ☐
- Vulcanizing equipment ☐

- Welding equipment:
  - Hot gas welders ☐
  - Microwave cohesion welders ☐
  - Electronic welders ☐
  - Spin welders ☐
  - Ultrasonic welders ☐
- Winding machines:
  - Winders ☐
  - Rewinders ☐
- Other (specify) ☐

Miscellaneous Machines and Equipment:

- Buffing and sanding machines ☐
- Scales:
  - Balance scales ☐
  - Platform scales ☐
- Grinders ☐
- Lathes: ☐
  - Engine lathes ☐
  - Turret lathes ☐
- Hoists ☐
- Pumps ☐
  - Vacuum pumps ☐
- Sewing machine ☐
- Bandsaw ☐
- Milling machines ☐
  - Electrical discharge milling machine ☐
- Routers ☐
- Shapers ☐
- Tapping machine ☐
- Tracer mills ☐
- Shears ☐
- Fiberglass dowel machine ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Files ☐
  - Hacksaws ☐
  - Hammers ☐
  - Hand spreaders ☐
  - Knives ☐
  - Mallets ☐
  - Scissors ☐
  - Scrapers ☐
  - Screwdrivers ☐
  - Snips ☐
  - Wrenches ☐
  - Other (specify) ☐
- Power handtools:
  - Buffers ☐
  - Drills ☐
  - Grinders ☐
  - Polishers ☐
  - Riveting gun ☐
  - Scissors ☐
  - Screwdrivers ☐
  - Spray gun ☐
  - Other (specify) ☐

Work Aids

- Control devices:
  - Control valves ☐
  - Counters ☐
  - Diameter controls ☐
  - Eccentricity controls ☐
  - Flow meters ☐
  - Indicators ☐
  - Length controls ☐
  - Level controls ☐
  - Photoelectric cells ☐
  - Pressure meters ☐
  - Pyrometers ☐
  - Recorders ☐
  - Sequencing controls ☐
  - Tachometers ☐
  - Temperature controls ☐
  - Thermometers ☐
  - Thickness controls ☐
  - Timers ☐
  - Transmitting devices ☐
  - Viscosity indicators ☐
  - Weight controls ☐
  - X-ray devices ☐
- Measuring Instruments:
  - Calipers ☐
  - Dial indicators ☐
  - Feeler gages ☐
  - Micrometers ☐
  - Rules ☐
- Testing instruments:
  - Acid bath tester ☐
  - Aging ovens ☐
  - Balances ☐
  - Brabender testers ☐
  - Burst testers ☐
  - Color testers ☐
  - Compressions tester ☐
  - Dielectric tester ☐
  - Electrostatic charge tester ☐
  - Hardness tester ☐
  - Heat guns ☐
  - Holiday detectors ☐
  - Humidity control testers ☐
  - Impact testers ☐
  - Infrared thermometers ☐
  - Mass flow meters ☐
  - Moisture meters ☐
  - Spectrophotometers ☐

- Tension testers ☐
- Thickness gages ☐
- Torsion meters ☐
- Vacuum gages ☐
- Viscosimeters ☐
- Weathering testers ☐
- Ultrasonic testers ☐
- Eddy current testers ☐
- X-ray testers ☐
- Densitometers ☐
- Other (specify) ☐

- Blueprints ☐
- Job orders ☐
- Material lists ☐
- Production orders ☐
- Product specifications ☐
- Standard charts ☐
- Formulas ☐
- Manuals ☐
- Inspection reports ☐
- Laboratory reports ☐
- Fixtures ☐
- Jigs ☐
- Guides ☐
- Stops ☐
- Clamps ☐
- Hoists ☐
- Models ☐
- Prototype products ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate products processed or manufactured.

- Advertising products ☐
- Aerosol components ☐
- Air conditioner components ☐
- Aircraft components ☐
- Amusement park cars ☐
- Ammunition cases and containers ☐
- Angles ☐
- Antenna components ☐
- Appliance components ☐
- Applicators ☐
- Archery products ☐
- Ash trays ☐
- Autoclave and Hydroclave components ☐
- Automobile components ☐
- Automotive components ☐
- Awnings (reinforced fiber glass) ☐
- Badges ☐
- Bag liners ☐
- Bags ☐
- Balls and ball components ☐
- Bars ☐
- Barrels ☐
- Bases for products ☐
- Basins ☐
- Baskets ☐
- Bassinets ☐
- Bath fixtures ☐
- Bathroom accessories and fixtures ☐
- Bats ☐
- Battery parts ☐
- Beads ☐
- Beakers ☐
- Bearings ☐
- Beer carriers ☐
- Bellows ☐
- Belting ☐
- Belts ☐
- Benches ☐
- Bezel assemblies ☐
- Bezels ☐
- Bicycle parts and accessories ☐
- Billfold items ☐
- Billiard supplies ☐
- Binders ☐
- Bindings ☐
- Bins ☐
- Blades for products ☐
- Blood test kits ☐
- Blower components ☐
- Boats ☐
- Bobbins ☐
- Bolts ☐
- Bottle:
  - Cap bands ☐
  - Caps ☐
  - Carriers ☐
  - Closures ☐
  - Disks ☐
  - Holders ☐
- Bottles for products ☐
- Boudoir accessories ☐
- Bowling supplies ☐
- Bowls ☐
- Boxes ☐
- Brackets ☐
- Braziers ☐
- Brief cases ☐
- Brush components ☐

- Brushes ☐
- Buckets ☐
- Buckles ☐
- Buffers ☐
- Building components ☐
- Bumpers for products ☐
- Buoys ☐
- Bushings ☐
- Business machine components ☐
- Button blanks ☐
- Buttons ☐
- Cabinet components ☐
- Cabinets ☐
- Cable covering ☐
- Cages ☐
- Cake covers ☐
- Cameos ☐
- Camera equipment and components ☐
- Cams ☐
- Candle holders ☐
- Candy sticks ☐
- Cannisters ☐
- Canoes ☐
- Canopies ☐
- Cans ☐
- Canteen tops ☐
- Capacitors ☐
- Caps for products ☐
- Carafes ☐
- Cards ☐
- Cargo containers ☐
- Carpeting ☐
- Carriers ☐
- Cartridges ☐
- Cases for products ☐
- Cash drawers ☐
- Casket vaults ☐
- Casters ☐
- Catheters ☐
- Cellular foam products ☐
- Chairs and chair components ☐
- Channels ☐
- Chess sets ☐
- Christmas decorations and displays ☐
- Cigarette holders ☐
- Circuit boards ☐
- Circuit breakers ☐
- Circuit components ☐
- Cleaning aids and compounds ☐
- Cleats ☐
- Clips ☐
- Clock components ☐
- Closures for products ☐
- Clothespins ☐
- Coasters ☐
- Coatings ☐
- Coffee makers ☐
- Coffee pot parts ☐
- Coil forms ☐
- Coils ☐
- Colanders ☐
- Combs ☐
- Commodes ☐
- Communication components ☐
- Commutators ☐
- Compacts ☐
- Computer components ☐
- Conduit ☐
- Cones ☐
- Connector assemblies ☐
- Connectors ☐
- Consoles ☐
- Containers for products ☐
- Control panels ☐
- Conveyor components ☐
- Cord ☐
- Core assemblies ☐
- Cores ☐
- Corner blocks ☐
- Corners ☐
- Counter tops ☐
- Couplings ☐
- Covers for products ☐
- Crates ☐
- Creamers ☐
- Crispers ☐
- Crystal ware ☐
- Cup holders ☐
- Cups ☐
- Curlers ☐
- Curtains ☐
- Cushioning materials ☐
- Cushions ☐
- Cutlery ☐
- Cylinders ☐
- Data cells ☐
- Data processing equipment components ☐
- Decanters ☐
- Decorations ☐
- Dental components and equipment ☐
- Deodorizers ☐
- Desk accessories and sets ☐
- Desks ☐
- Developing trays ☐
- Dials ☐
- Diaphragms ☐
- Dictation equipment ☐
- Diffusers ☐
- Dinnerware ☐
- Dishes ☐

- [ ] Dishwasher components
- [ ] Dispensers
- [ ] Display
- [ ] Disposable items
- [ ] Dividers
- [ ] Dollies
- [ ] Domes
- [ ] Door assemblies
- [ ] Doors
- [ ] Dowel pins
- [ ] Downspouts and gutters
- [ ] Drafting instruments
- [ ] Drainboards
- [ ] Drapery accessories
- [ ] Drapery hardware
- [ ] Drawers
- [ ] Drinkware
- [ ] Drop cloths
- [ ] Dropper assemblies
- [ ] Droppers
- [ ] Drums
- [ ] Dryers and components
- [ ] Ducts
- [ ] Edgings
- [ ] Egg cartons
- [ ] Egg flats
- [ ] Electrical components
- [ ] Electronic components
- [ ] Emblems
- [ ] Enclosures
- [ ] Engravings
- [ ] Entertainment items and parts
- [ ] Escutcheons
- [ ] Fabrics
- [ ] Fairings
- [ ] Fans
- [ ] Farm equipment and components
- [ ] Facias
- [ ] Fasteners
- [ ] Feeders
- [ ] Fencing
- [ ] Fenders
- [ ] Ferrules and bases
- [ ] Fiberglass products
- [ ] Figures
- [ ] Filaments
- [ ] Film
- [ ] Filter components
- [ ] Filters
- [ ] Finials
- [ ] Fire-extinguishers
- [ ] Fishing lures
- [ ] Fishing reels
- [ ] Filaments
- [ ] Fittings
- [ ] Fixtures
- [ ] Flashing
- [ ] Flashlights and components
- [ ] Floats
- [ ] Float valves
- [ ] Flooring
- [ ] Flower pots
- [ ] Flowers
- [ ] Flumes
- [ ] Flyswatters
- [ ] Foam products
- [ ] Foils
- [ ] Food processing equipment
- [ ] Food service equipment
- [ ] Footwear
- [ ] Forks
- [ ] Forms
- [ ] Frames
- [ ] Freezer components
- [ ] Fuel cells
- [ ] Funnels
- [ ] Furniture
- [ ] Furniture components
- [ ] Fuse components
- [ ] Games and game components
- [ ] Garden accessories and sets
- [ ] Gardening equipment
- [ ] Gaskets
- [ ] Gates
- [ ] Gears and gear components
- [ ] Gift items and wares
- [ ] Glasses
- [ ] Glides
- [ ] Globes and globe components
- [ ] Golfing accessories
- [ ] Gratings
- [ ] Grids
- [ ] Grilles
- [ ] Grips
- [ ] Grommets
- [ ] Grooming aids
- [ ] Guards
- [ ] Guides
- [ ] Gun components
- [ ] Hair accessories
- [ ] Hammers
- [ ] Hampers
- [ ] Handles
- [ ] Hardware
- [ ] Harnesses
- [ ] Hats
- [ ] Headboards
- [ ] Headers
- [ ] Hearing aid components
- [ ] Helmets

- Hobby horses ☐
- Hobby kits ☐
- Holders ☐
- Honeycomb structures ☐
- Hoods ☐
- Hooks ☐
- Hoppers ☐
- Hose ☐
- Hospital items and supplies ☐
- Housewares ☐
- Housings ☐
- Hub caps ☐
- Humidifier components ☐
- Ice buckets ☐
- Ice chests ☐
- Identification products ☐
- Impellers ☐
- Indicators ☐
- Infant accessories and items ☐
- Infants' wear ☐
- Inhalers ☐
- Inserts ☐
- Instrument components ☐
- Instruments ☐
- Insulation ☐
- Insulators ☐
- Interrupters ☐
- Jars ☐
- Jewelery and accessories ☐
- Joints ☐
- Jugs ☐
- Keys ☐
- Knives ☐
- Knobs ☐
- Labels ☐
- Laminates ☐
- Lamp assemblies ☐
- Lamp components ☐
- Lamps ☐
- Lanterns ☐
- Lattices ☐
- Legs ☐
- Lenses ☐
- Letter openers ☐
- Lids ☐
- Lighting accessories and components ☐
- Liners ☐
- Loudspeakers ☐
- Lubricants ☐
- Luggage ☐
- Mallets ☐
- Manikins ☐
- Markers ☐
- Mats ☐
- Mattresses ☐
- Measurers ☐
- Meat trays ☐
- Medallions ☐
- Meters ☐
- Microphonic components ☐
- Missile components ☐
- Mixers ☐
- Models ☐
- Moldings ☐
- Motor components ☐
- Name plates ☐
- Napkin holders ☐
- Nasal aspirators ☐
- Netting ☐
- Notions ☐
- Novelties ☐
- Nozzles ☐
- Nuts ☐
- Office equipment components ☐
- Optical product components ☐
- Ordnance devices and items ☐
- Organ components ☐
- Ornaments ☐
- Outlets ☐
- Packaging ☐
- Packaging components ☐
- Packaging compounds ☐
- Packaging materials ☐
- Packing ☐
- Padding ☐
- Pads ☐
- Pails and liners ☐
- Paneling ☐
- Panels ☐
- Pans ☐
- Pantryware ☐
- Partitions ☐
- Patioware ☐
- Pen barrels and components ☐
- Pen holders ☐
- Pencil parts ☐
- Pet feeders ☐
- Phonograph records ☐
- Photocopier components ☐
- Photo equipment components ☐
- Picnic accessories and items ☐
- Pillows ☐
- Pinions ☐
- Pins ☐
- Pipe ☐
- Pipe fittings ☐
- Pipes ☐
- Pipettes ☐
- Piping components ☐
- Pitchers ☐

- Planters ☐
- Plaques ☐
- Plates ☐
- Playground equipment ☐
- Plugs ☐
- Plumbing components and parts ☐
- Plumbing fixtures and fittings ☐
- Pointers ☐
- Poker chips and racks ☐
- Poles ☐
- Pool balls ☐
- Popsicle molds ☐
- Posts ☐
- Pots ☐
- Precision parts ☐
- Profiled parts ☐
- Profiles ☐
- Projector parts ☐
- Projectors ☐
- Protectors ☐
- Protractors ☐
- Pulleys ☐
- Pulls ☐
- Pump components ☐
- Pumps ☐
- Push buttons ☐
- Puzzles ☐
- Racks ☐
- Radar screens ☐
- Radio components ☐
- Radomes ☐
- Railings ☐
- Razor components ☐
- Receptacles ☐
- Reducers ☐
- Reels ☐
- Refrigeration components ☐
- Refrigerator accessories ☐
- Relay components ☐
- Relays ☐
- Retainers ☐
- Ribbons ☐
- Rings ☐
- Rivets ☐
- Rods ☐
- Rollers ☐
- Rotors ☐
- Rulers ☐
- Rules ☐
- Runners ☐
- Scale parts ☐
- Scales ☐
- Scoops ☐
- Scrapers ☐
- Screens ☐
- Screws ☐
- Scrubbers ☐
- Sculpture ☐
- Seals ☐
- Seat parts ☐
- Seats ☐
- Separators ☐
- Sewer and drain fittings ☐
- Sewer mains ☐
- Sewer pipe and fittings ☐
- Sewing machine components ☐
- Shades ☐
- Shafts ☐
- Shakers ☐
- Shapes ☐
- Sheets ☐
- Sheeting ☐
- Shelves ☐
- Shelving ☐
- Shields ☐
- Shoe findings ☐
- Shoe products ☐
- Shower doors ☐
- Shower accessories ☐
- Shrouds ☐
- Shutters ☐
- Siding ☐
- Signs ☐
- Sinks and accessories ☐
- Skegs ☐
- Skylights ☐
- Sleeves ☐
- Sleeving ☐
- Sockets ☐
- Sonar domes ☐
- Sonar gear components ☐
- Spacers ☐
- Spatulas ☐
- Spigots ☐
- Splines ☐
- Spools ☐
- Sponges ☐
- Spoons ☐
- Sporting goods ☐
- Spouts ☐
- Springs ☐
- Sprinklers and components ☐
- Stacks ☐
- Stair components ☐
- Stampings ☐
- Stands ☐
- Statuary ☐
- Stereo components ☐
- Stirrers ☐

- Stones ☐
- Stools ☐
- Stopcocks ☐
- Stoppers ☐
- Strainers ☐
- Strapping ☐
- Straps ☐
- Straws ☐
- Strips ☐
- Structural components ☐
- Suitcases ☐
- Sunglasses ☐
- Surfboards ☐
- Switch components ☐
- Switches ☐
- Swizzle sticks ☐
- Syringes ☐
- Table accessories ☐
- Tables ☐
- Table ware ☐
- Tabs ☐
- Tags ☐
- Tanks ☐
- Tape ☐
- Tape components ☐
- Tape dispensers ☐
- Tape recorders ☐
- Tapes ☐
- Tarps ☐
- Tees ☐
- Teflon products ☐
- Telephone components ☐
- Telephone circuit networks ☐
- Television components ☐
- Templates ☐
- Terminal blocks ☐
- Terminal boards ☐
- Terminals ☐
- Test tubes ☐
- Textile industry components ☐
- Thermometers and components ☐
- Thermostat components ☐
- Thread ☐
- Tile ☐
- Timing gears ☐
- Tires ☐
- Toilet seats ☐
- Tongs ☐
- Tools and molds ☐
- Tool components ☐
- Tops ☐
- Towers ☐
- Toy kits ☐
- Toy parts ☐
- Toys ☐
- Track ☐
- Trailer components ☐
- Trains ☐
- Transformer parts ☐
- Traps ☐
- Trash cans and containers ☐
- Travel accessories ☐
- Trays ☐
- Trim ☐
- Trimming ☐
- Trophies and components ☐
- Tube components ☐
- Tubes ☐
- Tubing ☐
- Tubs ☐
- Tumblers ☐
- Tuner parts ☐
- Typewriter parts ☐
- Urinals ☐
- Utensil parts ☐
- Vacuum cleaner components ☐
- Valve assemblies ☐
- Valves ☐
- Ventilating equipment components ☐
- Vessels ☐
- Vials ☐
- Visors ☐
- Wallboard ☐
- Wall coverings ☐
- Washers ☐
- Waste baskets ☐
- Weather stripping ☐
- Webbing ☐
- Welting ☐
- Welts ☐
- Wheels ☐
- Window components ☐
- Windows ☐
- Windshields ☐
- Wipers ☐
- Wire connectors ☐
- Wire ties ☐
- Wiring devices ☐
- Yarns ☐
- Yo-yos ☐
- Zippers ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

FOOD PROCESSING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs, and coordinates processing activities of a(n):
- Slaughtering and meat packing plant ☐
- Creamery ☐
- Canning and preserving plant ☐
- Grain and feed mill ☐
- Bakery ☐
- Sugar refinery ☐
- Confectionery plant ☐
- Distillery ☐
- Winery ☐
- Brewery ☐
- Soft drink plant ☐
- Organic edible oil refining plant ☐
- Specialty food or food preparation plant ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Slaughtering, dressing or processing, or packing of meats or meat products ☐
- Killing, dressing, processing, or packing poultry or small game ☐
- Breaking and processing of eggs ☐
- Canning and preserving of:
  - Vegetables ☐
  - Fruits ☐
  - Seafoods ☐
  - Vegetable or fruit juices ☐
- Processing:
  - Milk and dairy products ☐
  - Sugar and sugar products ☐
  - Bakery products ☐
  - Candy and confectionery items ☐
  - Grain and feed mill products ☐
  - Vinous wines and spirits ☐
  - Distilled liquors ☐
  - Malt and malt liquors ☐
  - Vegetable oils ☐
  - Animal and marine fats and oils ☐
  - Coffee and coffee extracts ☐
  - Margarine, table oils, and other edible fats and oils ☐
  - Ice ☐
  - Macaroni, spaghetti, and noodles ☐
  - Miscellaneous food preparation ☐
- Other (specify) ☐

- Prepares work and worker schedules ☐
- Assigns workers to specific duties ☐
- Interprets processing orders, product specifications, and technical data for workers ☐
- Gives workers directions concerning assigned duties ☐
- Advises workers on methods and procedures for solving work problems ☐
- Reviews laboratory and testing reports on materials and products ☐
- Orders changes in processing methods or equipment operation ☐
- Coordinates processing activities with activities of other processing stations ☐
- Requisitions materials and supplies for scheduled processing activities ☐
- Trains workers in machine or equipment operation ☐
- Notifies maintenance personnel of needed machine or equipment repairs ☐
- Enforces worker compliance with established procedures, regulations, and safety rules ☐
- Observes workers to insure compliance with work directions ☐
- Keeps processing and production records ☐
- Prepares activity and production reports ☐
- Other (specify) ☐

Reads or reviews:

- Product specifications ☐
- Production schedules ☐
- Material specifications ☐
- Laboratory analyses of materials or products ☐
- Processing schedules ☐
- Formulas ☐
- Recipes ☐
- Work orders ☐
- Other (specify) ☐

Determines:

- Manpower requirements for scheduled operations ☐
- Classifications of workers for operations ☐
- Material processing sequences ☐
- Material processing requirements ☐
- Material requirements ☐
- Routing of materials in process through processing stations ☐
- Set up requirements for machines ☐
- Control settings on machines and equipment ☐
- Adjustments to machines and equipment required ☐
- Other (specify) ☐

Operates, controls, or tends machines or equipment to:

- Crush or mill materials to size for further processing ☐
- Mix or compound materials according to formula ☐
- Obtain mixture or compound of specified texture or consistency ☐
- Separate from compound or mixture specified materials ☐
- Produce bacteria or other micro-organisms for use in processing of food ☐
- Break down organic molecules by fermentation ☐
- Flavor or preserve food, materials, or products ☐
- Distill liquid materials for obtaining specified substances ☐
- Saturate materials with other substances ☐
- Roast materials or products ☐
- Melt materials for further processing ☐
- Dry materials or products ☐
- Dehydrate materials or products ☐
- Temper materials ☐
- Pasteurize materials ☐
- Extract specified substances from raw materials ☐
- Cool or condense materials or products ☐
- Freeze materials or products ☐
- Cook ingredients according to specifications ☐
- Coat, fill, or decorate products with confectionery materials ☐
- Fill or stuff moldings or casings with materials ☐
- Cut or slice products or materials into specified size ☐
- Spray products with coating materials ☐
- Hull materials ☐
- Shell materials ☐
- Peel materials ☐
- Wash and sterilize materials or dairy products processing equipment ☐
- Homogenize materials ☐
- Other (specify) ☐

Assists operator of machines or equipment to process materials or products ☐

Sets controls for specified:

- Temperature ☐
- Pressure ☐
- Vacuum ☐
- Material flow rates ☐

- Material feed rates ☐
- Processing operations ☐
- Weight of material ☐
- Volume of material ☐
- Other (specify) ☐

Moves levers or controls to:
- Start or stop machines or equipment ☐
- Regulate speed of machines ☐
- Set length of stroke on press ram ☐
- Adjust processing operations ☐
- Regulate automatic feed mechanisms ☐
- Other (specify) ☐

Monitors:
- Panelboard gages, meters, and lights ☐
- Recording instruments and indicators ☐
- Temperature gages ☐
- Flow meters ☐
- Machine operations ☐
- Material processing operations ☐
- Other (specify) ☐

Observes:
- Workers to insure compliance with work directions, regulations, and safety rules ☐
- Product for conformance with specifications ☐
- Color, texture, and consistency of materials ☐
- Operational performance of machines or equipment ☐
- Other (specify) ☐

Calculates batch weights and proportions of materials or ingredients ☐
Weighs material or ingredients specified ☐
Dumps materials or ingredients into tank, hopper, or kettle ☐
Starts pumps and meters liquid ingredients into machine or equipment ☐
Opens valves to fill tank, kettle, or other equipment to specified height ☐
Opens valves to admit steam into mixture or jacket of kettle or cooker ☐
Starts agitators, mixing blades, or beaters ☐
Feels sample of mixture for specified texture or consistency ☐
Draws sample of materials for laboratory analysis or testing on station ☐
Tests solutions for:
- Specific gravity ☐
- Viscosity ☐
- Acidity ☐
- Flavor ☐
- Alcoholic content or proof ☐

Compares color of materials with standard charts of samples ☐
Adds materials to solution or mixture to obtain specified:
- Concentration ☐
- Strength ☐
- Color ☐
- Taste ☐
- Viscosity ☐
- Consistency ☐
- Acidity ☐
- Neutralization ☐
- Flavor ☐
- Alcoholic proof ☐
- Fermentation ☐
- Germination ☐
- Organic reaction ☐

Moves levers to dump processed materials into container or tank ☐
Starts pumps to transfer materials into next processing unit or into storage tanks ☐
Feeds materials into processing equipment or machines ☐
Offbears materials or products ☐

Performs manual operations to:
- Mix, blend, or knead ingredients ☐
- Shape, roll, and cut materials into specified shape ☐
- Apply glaze, topping, icing, or decorations on products ☐
- Pull, spin, or roll confectionery products ☐
- Dip products in solutions for curing, preserving, or salting ☐
- Shackle legs of animals to be slaughtered ☐
- Stun animals before slaughtering ☐
- Sever jugular vein of animals or poultry ☐
- Skin animals ☐
- Pluck feathers and clean poultry ☐
- Scale, clean, and butcher fish and shellfish ☐
- Trim meat from head of animal ☐
- Saw or trim animal carcass ☐
- Cut out, trim, sort, and wash viscera ☐
- Wrap side of carcass ☐
- Cut standard cuts of meats ☐
- Bone meat or poultry ☐
- Cut up poultry and small game ☐
- Hang meat or meat products in smoking or drying room ☐
- Sort materials according to grade ☐
- Remove foreign matter from raw materials ☐
- Pack materials or products in freeze room ☐
- Sew or tie casing after filling with product ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Technical Personnel ☐
- Other Supervisors ☐
- Laboratory Personnel ☐
- Workers ☐
- Helpers ☐
- Crew Members ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- College ☐
- Vocational School ☐
- Technical School ☐
- Apprenticeship ☐
- On-the-job Training ☐
- Other (specify) ☐

UNION AFFILIATION

Record an "X" to indicate union affiliation.

Teamsters Affiliated Locals:
- [illegible]ery Employees and Drives Union ☐
- Brewery, Soda, and Mineral Water Bottlers ☐
- Food Processors, Packers, Warehouseman, and Clerical ☐

Bakery and Confectionery Workers, International Union of America ☐
Butchers Union ☐
Baker's Union ☐
Food Processors, Helpers, and Sales Drivers Union ☐

- Packing House Workers Union ☐
- Grain Millers Union ☐
- Brewery and Brewery Workers Union ☐
- Bottlers Union ☐
- Cannery Workers Union ☐
- Packing House, Food, and Allied Workers Union ☐
- Distillery, Wine, and Allied Workers International Union ☐
- Other (specify) ☐

LICENSURE OR CERTIFICATION

Record an "X" to indicate licenses or certification required.

- Federal ☐
- State ☐
- County ☐
- Local ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools equipment, or work aids used.

Machines:
- Blanching machine ☐
- Blenders ☐
- Blending tanks ☐

Casing machines:
- Casing running machine ☐
- Casing linking machine ☐
- Casing stuffing machine ☐

Centrifuges ☐

Conveyors:
- Belt conveyors ☐
- Elevators ☐
- Pneumatic conveyors ☐
- Screw conveyors ☐

Cleaning machines:
- Air cleaning machines ☐
- Linter machines ☐
- Washing machines ☐

- Coating machines:
  - Candy enrobing machine ☐
  - Candy sanding machine ☐
  - Icing machines ☐
  - Spray coating machines ☐
- Cake forming presses ☐
- Cake stripping machines ☐
- Coring machines ☐
- Churning machines ☐
- Doughnut making machines ☐
- Cutting machines:
  - Dividing machines ☐
  - Dicing machines ☐
  - Halving machines ☐
  - Chopping machines ☐
  - Grating machines ☐
  - Mincing machines ☐
  - Shredding machines ☐
  - Silver cutting machine ☐
  - Slicing machines ☐
- Hulling machines ☐
- Grain polishing machines ☐
- Egg breaker and yolk separating machine ☐
- Grinding mills:
  - Fuss mills ☐
  - Hammermills ☐
  - Impact mills ☐
  - Powder mills ☐
  - Roll mills ☐
  - Stone grinding mills ☐
- Mixing machines:
  - Beater mixer machines ☐
  - Batter mixer machines ☐
  - Dough mixing machines ☐
  - Mingling machines ☐
  - Rotary drum mixing machine ☐
  - Vortator ☐
- Filling machines:
  - Carton filling machines ☐
  - Bag filling machines ☐
  - Bottle filling machines ☐
  - Pie filling machines ☐
- Molding machines ☐
  - Candy molding machine ☐
- Curing injection machine ☐
- Filters:
  - Char filters ☐
  - Filter presses ☐
  - Plate and frame filter presses ☐
  - Rotary leaf filter ☐
  - Rotary drum vacuum filters ☐
- Sorting machines:
  - Electric eye sorting machines ☐
  - Sorting and sizing machines ☐
  - Sizing machines ☐
- Screening machines:
  - Vibrating screens ☐
  - Sifting machines ☐
  - Shaking machines ☐
- Carton forming, filling, and sealing machine ☐
- Carton sealing machine ☐
- Packaging machines ☐
- Pitting machines ☐
- Peeling machines ☐
- Pelletizing machines ☐
- Pretzel forming machine ☐
- Pan greasing machine ☐
- Shelling machines ☐
- Wafer making machine ☐
- Dehairing machine ☐
- Car tipple machine ☐
- Presses:
  - Extruding presses ☐
  - Hydraulic presses ☐
  - Deoiling presses ☐
  - Sugar cube presses ☐
- Pumps:
  - Centrifugal pumps ☐
  - Vacuum pumps ☐
  - Material transfer pumps ☐
- Stick inserting machines ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Wrenches ☐
  - Screwdrivers ☐
  - Knives:
    - Boning knives ☐
    - Trimming knives ☐
    - Fillet knives ☐
    - Curd knives ☐
  - Meat saws ☐
  - Cleavers ☐
  - Scrapers ☐
  - Spatulas ☐
  - Spoons ☐
  - Forks ☐
  - Brushes ☐
  - Icing bags ☐
  - Hand beaters ☐
  - Other (specify) ☐

- Power handtools:
  - Electrical handtools ☐
  - Pneumatic handtools ☐
- Other (specify) ☐

Equipment:

Processing tank equipment:

- Melting tanks ☐
- Flotation tanks ☐
- Settling tanks ☐
- Mixing tanks ☐
- Cistern tanks ☐
- Weigh scale tank ☐
- Fermenting tanks ☐
- Germination tanks ☐
- Steeping tanks ☐
- Brine tanks ☐
- Brine making tanks ☐
- Carbonation tanks ☐
- Curing tanks ☐
- Refrigerated tanks ☐
- Proofing tanks ☐
- Tempering tanks ☐
- Other (specify)

- Sterilizing equipment ☐
- Clean-in-plate equipment ☐
- Diffusing equipment ☐
- Beet diffusing equipment ☐
- Percolating equipment ☐
- Smoking equipment ☐
- Roasting equipment ☐
- Continuous roasting equipment ☐
- Crystallizers ☐
- Sulfurizing equipment ☐
- Smoking equipment ☐
- Rectifier equipment ☐
- Pasteurizers ☐
- Homogenizers ☐
- Continuous milk processing equipment ☐
- Dehydrating equipment ☐
- Evaporators ☐
- Ovens ☐
- Continuous baking ovens ☐
- Retorts ☐
- Oasts ☐
- Furnaces ☐
- Other (specify) ☐

Processing rooms:

- Smoke rooms ☐
- Wine cellars ☐
- Proofing rooms ☐
- Freeze rooms ☐
- Other (specify) ☐

Work Aids:

Measuring devices:

- Micrometers ☐
- Refractometers ☐
- Thermometers ☐
- Salinometers ☐
- Pyrometers ☐
- Ph meters ☐
- Hydrometers ☐
- Alcohol proof hydrometer ☐
- Titrometer ☐
- Manometer ☐
- Turbidometer ☐
- Calorimeter ☐
- Viscosimeter ☐
- Flow meter ☐
- Other (specify) ☐

Manuals:

- Processing manuals ☐
- Equipment operation manuals ☐
- Safety manuals ☐
- Other (specify) ☐

Specifications:

- Processing specifications ☐
- Material specifications ☐
- Product specifications ☐
- Other (specify) ☐

- Station logs ☐
- Production reports ☐
- Processing reports ☐
- Formulas ☐
- Recipes ☐
- Production forms ☐
- Testing forms ☐
- Proofsticks ☐
- Molds ☐
- Funnels ☐
- Cooling slabs ☐
- Heating slabs ☐
- Warming slabs ☐
- Skewers ☐
- Airbases ☐
- Waxpaper ☐
- Mixing bowls ☐
- Ultraviolet lamps ☐
- Sorting tables ☐
- Chopping blocks ☐
- Color charts ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate type or product processed or produced

Type of food products:
- Baked ☐
- Boiled ☐
- Boned ☐
- Bottled ☐
- Brined ☐
- Canned ☐
- Concentrated ☐
- Condensed ☐
- Cooked ☐
- Cultured ☐
- Cured ☐
- Dehydrated ☐
- Deviled ☐
- Dressed ☐
- Dried ☐
- Fermented ☐
- Flash frozen ☐
- Freeze dried ☐
- Fresh ☐
- Homogenized ☐
- Jammed ☐
- Jellied ☐
- Kosher ☐
- Packaged ☐
- Paste ☐
- Pasturized ☐
- Pickled ☐
- Potted ☐
- Powdered ☐
- Preserved ☐
- Salted ☐
- Smoked ☐
- Spiced ☐
- Steamed ☐
- Stewed ☐
- Stuffed ☐
- Vitaminized ☐
- Other (specify) ☐

Meats and meat products:
- Bacon ☐
- Beef ☐
- Blood meal ☐
- Corned beef ☐
- Frankfurters ☐
- Headcheese ☐
- Lamb ☐
- Luncheon meats ☐
- Meat extracts ☐
- Meat meal ☐
- Mutton ☐
- Pastrami ☐
- Pigs feet ☐
- Pork ☐
- Sausage ☐
- Scrapple ☐
- Tripe ☐
- Vienna sausage ☐
- Other (specify) ☐

Meat byproducts:
- Grease ☐
- Hides ☐
- Lard ☐
- Tallow ☐
- Other (specify) ☐

Meat animal food:
- Horsemeat ☐
- Bone meal ☐
- Dog meat ☐
- Cat meat ☐
- Other (specify) ☐

Poultry and poultry products:
- Chicken ☐
- Cornish hen ☐
- Duck ☐
- Eggs ☐
- Geese ☐
- Turkey ☐
- Other (specify) ☐

Small game:
- Rabbit ☐
- Hare ☐
- Other (specify) ☐

Seafood and seafood products:

Finfish:
- Anchovies ☐
- Cod ☐
- Herring ☐
- Mackerel ☐
- Salmon ☐
- Sardines ☐
- Swordfish ☐
- Tuna ☐
- Other (specify) ☐

Shellfish:
- Clam ☐
- Crab ☐
- Lobster ☐
- Mussels ☐

- Oysters ☐
- Scallops ☐
- Shrimp ☐
- Other (specify) ☐

Seafood products:
- Caviar ☐
- Clam chowder ☐
- Finnan haddie ☐
- Fish egg bait ☐
- Fish oil meal ☐
- Fish oil:
  - Cod liver oil ☐
  - Whale oil ☐
- Fish pet foods ☐
- Other (specify) ☐

Dairy products:
- Anhydrous milkfat ☐
- Baby formulas ☐
- Butter ☐
- Buttermilk ☐
- Butter oil ☐
- Cheese:
  - Cheese pastes ☐
  - Cheese spreads ☐
- Chocolate milk ☐
- Cream ☐
- Ice cream ☐
- Ice cream mix ☐
- Ice milk ☐
- Kumyss ☐
- Lactose ☐
- Malted milk ☐
- Mellorine ☐
- Milk ☐
- Parfait ☐
- Sherbert ☐
- Spumoni ☐
- Yogurt ☐
- Zoolak ☐
- Other (specify) ☐

Agricultural food products:
- Fruits:
  - Cider ☐
  - Fruit butter ☐
  - Fruit cocktail ☐
  - Fruit jelly ☐
  - Fruit juice ☐
  - Fruit jam ☐
  - Fruit marmalade ☐
  - Fruit paste ☐
  - Fruit preserves ☐
  - Fruit nectar ☐
  - Fruit puree ☐
  - Fruit pudding ☐
  - Fruit glace ☐
  - Fruit concentrate ☐
- Nuts:
  - Almond paste ☐
  - Nut oil ☐
- Vegetables ☐
  - Vegetable pastes:
    - Tomato ketchup ☐
    - Tomato chili sauce ☐
    - Tomato paste ☐
    - Tomato puree ☐
  - Vegetable juices ☐
  - Vegetable puree ☐
- Vegetable oils and spreads:
  - Margarine ☐
  - Olive oil ☐
  - Salad oils ☐
  - Corn oil ☐
  - Cottonseed oil ☐
  - Soybean oil ☐
  - Castor oil ☐
  - Coconut oil ☐
  - Palm kernel oil ☐
  - Peanut oil ☐
  - Safflower oil ☐
  - Vegetable cooking oil ☐
  - Shortenings ☐
  - Other (specify) ☐

Grain products:
- Breakfast cereals ☐
- Bran and middlings:
  - Oat ☐
  - Rice ☐
  - Rye ☐
  - Wheat ☐
- Corn products:
  - Corn flour ☐
  - Corn sirup ☐
  - Corn oil cake ☐
  - Corn oil meal ☐
  - Corn starch ☐
  - Corn sugar ☐
  - Dextrine ☐
  - Dextrose ☐
  - Gluten ☐
  - Hominy ☐
  - Hominy grits ☐
- Flour:
  - Pizza ☐

- Buckwheat ☐
- Rice ☐
- Rye ☐
- Sorghum grain ☐
- Wheat ☐

Flour blends or mixes:

- Biscuit ☐
- Cake ☐
- Doughnut ☐
- Gingerbread ☐
- Pancake ☐
- Phosphated ☐
- Graham ☐

Starch:

- Potato ☐
- Rice ☐
- Root ☐
- Wheat ☐

- Oatmeal ☐
- Other (specify) ☐

Bakery Products:

- Bagel ☐
- Bread ☐
- Buns ☐
- Cakes ☐
- Crullers ☐
- Doughnuts ☐
- Knishes ☐
- Pastries ☐
- Pies ☐
- Rolls ☐
- goods ☐
- ☐
- ☐
- Ice cream cones ☐
- Pretzels ☐
- Sugar wafers ☐
- Zwieback ☐
- Other (specify) ☐

Sugar and sugar products:

- Beet sugar ☐
- Beet molasses ☐
- Blackstrap molasses ☐
- Brown sugar ☐
- Cane sugar ☐
- Cane sirup ☐
- Dried beet pulp ☐
- Invert sugar ☐
- Powdered sugar ☐
- Sugar cubes ☐
- ☐

Confectionary products:

- Candy ☐
- Candy bars ☐
- Chewing gum ☐
- Chocolate candy ☐
- Cough drops ☐
- Licorice ☐
- Lozenges ☐
- Marshmallows ☐
- Marzipan ☐
- Nuts ☐
- Baking chocolate ☐
- Chocolate coatings ☐
- Chocolate sirup ☐
- Cocoa ☐
- Other (specify) ☐

Beverages:

Malt liquors:

- Ale ☐
- Beer ☐
- Near beer ☐
- Stout ☐

- Malt ☐

Vinous liquors:

- Brandy ☐
- Brandy spirits ☐
- Wine ☐

Distilled or blended liquors:

- Applejack ☐
- Cocktails ☐
- Cordials ☐
- Ethyl alcohol ☐
- Gin ☐
- Liqueurs ☐
- Rum ☐
- Vodka ☐

Whiskey:

- Bourbon ☐
- Rye ☐
- Scotch ☐

Soft drinks and carbonated water:

- Birch beer ☐
- Root beer ☐
- Carbonated soda pop ☐
- Ginger ale ☐
- Mineral water ☐
- Other (specify) ☐

Flavorings, Extracts, and Sirups:

- Beverage bases ☐
- Bitters ☐
- Burnt sugar ☐
- Coffee flavoring and sirups ☐

PRODUCTS Continued

Specialty foods:
- Baby foods ☐
- Corn chips ☐
- Gelatin desserts ☐
- Kraut ☐
- Honey ☐
- Box lunches ☐
- Peanut butter ☐
- Potato chips ☐
- TV dinners ☐
- National native foods ☐
- Other (specify) ☐

Seasonings and dressings:
- Food dressings ☐
- French dressing ☐
- Horseradish ☐
- Mayonnaise ☐
- Mustard ☐
- Pickles ☐
- Relish ☐
- Russian dressing ☐
- Soy sauce ☐
- Meat seasonings ☐
- Spices ☐
- Vinegar ☐
- Other (specify) ☐

Miscellaneous food products:
- Coffee ☐
- Coffee extracts ☐
- Instant coffee ☐
- Coffee concentrates ☐

Ice:
- Cubes ☐
- Crushed ☐
- Block ☐

- Macaroni ☐
- Noodles ☐
- Spaghetti ☐
- Vermicelli ☐
- Bakers malt ☐
- Baking powder ☐
- Chicory ☐
- Instant cocoa ☐
- Instant chocolate ☐
- Leavening preparations ☐
- Maple sirup ☐
- Marshmallow creme ☐
- Pancake sirup ☐
- Pectin ☐
- Tea ☐
- Yeast ☐
- Corn chips ☐
- Bouillon cubes ☐
- Cider ☐
- Gelatin preparations ☐
- Meat seasonings ☐
- Peanut butter ☐
- Spices ☐
- Vinegar ☐
- Potato chips ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

HISTORY, SOCIOLOGY, AND ANTHROPOLOGY WORK

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Plans, organizes, and conducts:
- Historical research and studies to
  - Reconstruct chronological accounts of current or past events:
    - Dealing with some phase of activity as:
      - Individuals ☐
      - Social groupings ☐
      - Ethnic groupings ☐
      - Political groupings ☐
      - Geographic groupings ☐
  - Reconstruct a career or phase in a life of an individual ☐
  - Reconstruct the genealogy or background of an individual or family ☐
  - Establish the descent from a specific ancestor and identify forebears ☐
  - Authenticate details of items peculiar to given historical period or specific locality ☐
  - Avoid anachronisms and inaccuracies in depicting items of a specific historical period ☐
  - Other (specify) ☐

- Sociological research and studies on:
  - Origin and development of human beings ☐
  - Patterns of culture and social organization arising from group life in society ☐
  - Relationships between criminal law and the social order and causes of crime ☐
  - Group relationships in an industrial organization ☐
  - Punishment for, and prevention of, crime ☐
  - Management of penal institutions and rehabilitation of criminal offenders ☐
  - Rural problems caused by impact of scientific and industrial revolutions on the rural way of life ☐
  - Effect of physical environment and technology on spatial distribution of people and their activities ☐
  - Social problems arising from group or individual deviation from commonly accepted standards of conduct ☐
  - Social problems rooted in the failure of society to achieve its collective purposes ☐
  - Social patterns and distinctive problems resulting from urban environment ☐
  - Other (specify) ☐

- Physical anthropological research and studies concerning:
  - Origin, evolution, and races of man ☐
  - Man's distribution and characteristics ☐
  - Meanings and causes of human physical differences ☐
  - Physical and physiological adaptions to different environments and heredity characteristics of living populations ☐
  - Growth patterns, sexual differences, and aging phenomena of human groups ☐
  - Other (specify) ☐

- Archeological research, expeditions, studies, and field work to:
  - Reconstruct records of extinct or preliterate cultures ☐
  - Reconstruct records of literate periods of major civilizations ☐

- Uncover, reconstruct, and preserve artifacts of civilizations ☐
- Interpret artifacts according to civilization and period of history ☐
- Other (specify) ☐

Ethnological research and comparative studies concerning:
- Cultures, or selected aspects of living peoples of extinct races ☐
- Historical relationships or typographical classifications of cultures ☐
- Pre-industrial or non-western societies to ascertain the culture's:
  - Social and political organization ☐
  - Religion ☐
  - Economics ☐
  - Mythology and traditions ☐
  - Intellectural and social life ☐
- Other (specify) ☐

Scientific linguistics research and studies concerning:
- Structure and development of a language ☐
- Words and their structural characteristics ☐
- Reconstructing and deciphering ancient languages ☐
- Components, structure, and relationship within a language ☐
- Origin, history, and development of words ☐
- Tracing derivation of words ☐
- Tracing meaning of words from origin in parent language to present usage ☐
- Development of improved methods of translation ☐
- Teaching of language to other than native speakers ☐
- Preparation of language teaching materials, dictionaries and handbooks ☐
- Reducing unwritten language to standardized written form ☐
- Preparation of literacy materials of the language ☐
- Other (specify) ☐

Identifies and states nature, scope, and area of research ☐

Develops methods, techniques, and means for collecting and evaluating data ☐

Directs and coordinates activities of research workers ☐

Researches sources of information ☐

Consults with experts or witnesses of events ☐

Organizes and evaluates data on basis of authenticity or relative significance ☐

Reduces and processes data ☐

Analyzes, classifies, and interprets:
- Data on social phenomena as:
  - Communities ☐
  - Social institutions ☐
  - Ethnic minorities ☐
  - Social classes ☐
  - Social changes ☐
- Archeological findings in order to determine:
  - Age and period of artifacts or civilization ☐
  - Cultural identity ☐
- Other (specify) ☐

Prepares:
- Historical narrative, brief, or outline from data ☐
- Literary portrayal of character based on findings ☐
- Charts showing lines of descent and family relationship ☐
- History of family in narrative form ☐
- Historical accounts on:
  - Technological evolution within an industry ☐
  - Manners and customs peculiar to a certain period ☐
  - Development within specified discipline or field of work
- Reports on anthropological findings as:
  - Human physique of race ☐
  - Social customs ☐
  - Artifacts located ☐
- Scientific papers or publications on research ☐
- Description of differences between two languages for improving translation methods ☐
- Other (specify) ☐

Applies anthropological data and techniques for solving problems of human relations in fields of:
- Industrial relations ☐
- Race and ethnic relations ☐
- Social work ☐
- Public administration ☐
- Education ☐
- Public health ☐
- Foreign or transcultural programs ☐
- Other (specify) ☐

Formulates theories from research for application in:
- Historical field ☐
- Sociological field ☐
- Anthropological field ☐
- Ethnological field as:
  - General laws of cultural development ☐
  - Rules of social and cultural behavior ☐
  - Value orientations ☐
- Other (specify) ☐

Acts as consultant on:
- Problems of social policy for:
  - Lawmakers ☐
  - Administrators ☐
  - Educators ☐
  - Government personnel ☐
- Specified historical events ☐
- Ethnic problems ☐
- Other (specify) ☐

Studies human fossils and their meaning in terms of long range human evolution ☐

Observes and measures bodily variations and physical attributes of existing human types ☐

Supervises and coordinates activities of workers engaged in:
- Digging for acheological expeditions ☐
- Uncovering ancient structures ☐
- Locating artifacts ☐

Locates and assembles components of artifacts ☐

Establishes chronological sequence of each culture from simpler to more complex and advanced levels ☐

Preserves artifacts for display in museums ☐

Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Library Personnel ☐
- Archive Personnel ☐
- Historical Society Personnel ☐
- Educational Personnel ☐
- Field Personnel ☐
- Correctional Personnel ☐
- Judges ☐
- Scientific Personnel ☐
- Inmates ☐
- Groups ☐
- Individuals ☐
- Industrial Workers ☐
- Civic Organizational Personnel ☐
- Expedition Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate speciality area or degree major.

- Social Sciences ☐
- Social Studies ☐
- History ☐
- African History ☐
- Ancient History ☐
- Asian History ☐
- European History ☐
- Medieval History ☐
- Modern History ☐
- Nordic History ☐
- History and Government ☐
- Oriental History ☐
- Polynesian History ☐
- U.S. History ☐
- Biography ☐
- Genealogy ☐
- Sociology ☐
- Sociology and Anthropology ☐
- Sociology-Psychology ☐
- Correctional Work/Administration ☐
- Social Work ☐
- Social Service ☐
- Anthropology ☐
- Archeology ☐
- Ethnology ☐
- Philology ☐
- Etymology ☐
- Linguistics ☐
- Penology ☐
- Rural Sociology ☐
- Urban Sociology ☐
- Other (specify) ☐

DEGREE

Record an "X" to indicate degree.

- BA ☐
- MA ☐
- MCL ☐
- M CRIM ☐
- MS ☐
- D CRIM ☐
- Ph D ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

History:

- Western Civilization ☐
- History of England and Great Britain ☐
- History of the Americas ☐
- History of the United States ☐
- History of Asia ☐
- Ancient Greece ☐
- Roman History ☐
- Early Middle Ages ☐
- High Middle Ages ☐
- History of the Byzantine Empire ☐
- The Age of Renaissance ☐
- The Age of Reformation ☐
- The Age of Absolutism ☐
- Age of Enlightment ☐
- The French Revolution and Napoleon ☐
- Europe in the Nineteenth Century ☐
- Europe Since 1914 ☐
- Early Balkan and Near Eastern History ☐
- Recent Balkan and Near Eastern History ☐
- Northern Europe ☐
- Social History of Europe Since 1800 ☐
- Foundation of Russia ☐
- Modern Russia ☐
- Russian and Soviet Cultural History ☐
- Tudor and Stuart England ☐
- Hanoverian England ☐
- Victorian Britain ☐
- Recent Britain ☐
- British Empire and Commonwealth ☐
- Constitutional History of England ☐
- Latin American Peoples ☐
- Colonial Latin America ☐
- The Emerging Latin American Nations ☐
- Modern Latin America ☐
- History of Mexico ☐
- The Caribbean Area ☐
- Argentina ☐
- Brazil ☐
- Andean Nations of South America ☐
- United States, Colonial Period ☐
- United States, Age of Revolution ☐
- United States, Early National Period ☐
- United States, Jacksonian Democracy and the Sectional Crisis ☐
- United States, Civil War and Reconstruction ☐
- United States, Emergence of an Industrial Society ☐
- United States, The Progressive Period and the Twenties ☐
- United States, The Great Depression, War, and Its Aftermath ☐
- History of the Western Movement ☐
- History of the South ☐
- Early California History ☐
- Recent California History ☐
- American Urban History ☐
- Economic History of the United States ☐
- Social History of the United States ☐
- American Intellectual History ☐
- Diplomatic History of the United States ☐
- Constitutional History of the United States ☐
- History of the Afro-American in the United States ☐
- Legal History of the United States ☐
- Imperial China ☐
- Modern China ☐
- Traditional Japanese Civilization ☐
- Modern Japan ☐
- The Early History of India ☐
- Modern India, Religious Thought ☐
- History of Modern India ☐
- Intellectual History of Recent Japan ☐
- The Chinese Revolution ☐
- Africa Before Partition ☐
- Modern and Contemporary Africa ☐
- Historians and Historiography ☐
- The Literature of History ☐
- Other (specify) ☐

Sociology:

- Principles of Sociology ☐

- Social Trends and Problems ☐
- Elementary Statistics ☐
- Marriage ☐
- The Family ☐
- Sociology of Women ☐
- Social Psychology ☐
- Sociology of Small Groups ☐
- Juvenile Delinquency ☐
- Social Disorganization ☐
- Population and Migration ☐
- Advanced Statistics ☐
- Human Ecology ☐
- Rural-Urban Trends ☐
- Social Stratification ☐
- Social Institutions ☐
- Industrial Sociology ☐
- Sociology of Sexual Behavior ☐
- Sociology of Religion ☐
- Social Control ☐
- Symbolic Behavior ☐
- Criminology ☐
- Penology ☐
- Ethnic Group Relations ☐
- Methods of Sociological Research ☐
- Contemporary Sociological Theory ☐
- Family Life Education ☐
- Sociology of Knowledge ☐
- Research Methods ☐
- Sociological Theory ☐
- Population and Ecological Analysis ☐
- Sociology of the Aging ☐
- Occupational Attitudes and Norms ☐
- Demography of Social Disorganization ☐
- Race Relations ☐
- Social Statistics ☐
- Advanced Social Psychology ☐
- Quantitative Sociology ☐
- Other (specify) ☐

Anthropology:

- Introduction to Physical Anthropology ☐
- Introduction to Cultural Anthropology ☐
- Introduction to Archeology ☐
- Introduction to Linguistics ☐
- Comparative World Ethnology ☐
- Comparative Social Systems ☐
- Folklore ☐
- Native Peoples of Latin America ☐
- Contemporary Cultures of Latin America ☐
- Peoples of the Pacific ☐
- Native Peoples of the USSR ☐
- Cultures of China and East Asia ☐
- Cultures of India and Southeast Asia ☐
- Cultures of Africa ☐
- Africa and the New World ☐
- Prehistoric Cultures of Europe ☐
- Early Civilizations of the Old World ☐
- Ancient Civilizations of the New World ☐
- Prehistoric Cultures of North America ☐
- Human Evolution ☐
- Human Variation ☐
- Political Anthropology ☐
- Economic Anthropology ☐
- Personality and Culture ☐
- Language and Culture ☐
- Linguistic Anthropology ☐
- The Dynamics of Cultural Change ☐
- Field Methods in Archeology ☐
- Analysis of Interpretation of Archeological Data ☐
- Methods in Ethnology and Social Anthropology ☐
- Linguistic Methodology in Morphology and Syntax ☐
- Methods in Physical Anthropology ☐
- History and Theory of Anthropology ☐
- Foundations of Anthropological Knowledge ☐
- Kinship and Social Organization ☐
- Primitive and Peasant Economics and Development ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines and Equipment:

- Earth Moving Equipment:
  - Bulldozers ☐
  - Backhoes ☐
  - Motor Patrols ☐
  - Motorized Shovels:
    - Clamshells ☐
    - Bucket Shovels ☐
- Pumps ☐
- Hoists ☐
- Winches ☐
- Cameras:
  - Motion Picture Cameras ☐
  - Still Cameras ☐
- Alidades ☐
- Laboratory Equipment ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS—Continued

Tools:
- Spades ☐
- Trowels ☐
- Brushes ☐
- Measuring Tools ☐
- Other (specify) ☐

Work Aids:

Data:
- Survey Data ☐
- Historical Data ☐
- Biographical Data ☐
- Geographical Data ☐
- Genealogical Data ☐
- Zoological Data ☐
- Topographical Data ☐
- Botanical Data ☐
- Prior Archeological Data ☐
- Scientific Data ☐
- Demographic Data ☐
- Industrial Data ☐
- Technological Data ☐
- Criminal Data ☐
- Physical Environment Data ☐
- Other (specify) ☐

Records:
- Birth Records ☐
- Baptismal Records ☐
- Death Records ☐
- Marriage Records ☐
- Archive Records ☐
- Census Records ☐
- Rural Population Records ☐
- Church Records ☐
- Diaries ☐
- Personal Papers ☐
- Wills ☐
- Correspondence ☐
- Court Records ☐
- Other (specify) ☐

Artifacts:
- Animal Fossils ☐
- Human Fossils ☐
- Skeletal Remains ☐
- Parchments ☐
- Scrolls ☐
- Pottery ☐
- Pictorial Artifacts ☐
- Other (specify) ☐

- Published Materials ☐
- Pictorial Materials ☐
- Cataloging Materials ☐
- Adhesives ☐
- Glues ☐
- Preservatives ☐
- Plane Tables ☐
- Rigging Materials ☐
- Precision Measuring Instruments ☐
- Sketches ☐
- Scientific Illustrations ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

INSTRUMENTS AND APPARATUS MANUFACTURING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with manufacturing instruments, apparatus, devices, and related equipment used for such functional purposes as:
- Analyzing ☐
- Computing ☐
- Controlling ☐
- Counting ☐
- Detecting ☐
- Directing ☐
- Sighting and Viewing ☐
- Measuring:
  - Gaging ☐
  - Metering ☐
- Indicating ☐
- Recording ☐
- Testing ☐
- Timing ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Fabricating parts used in manufacture of products ☐
- Assembling:
  - Parts into units or subassemblies ☐
  - Parts, units, subassemblies, and hardware into completed product ☐
- Inspecting:
  - Materials ☐
  - Fabricated parts ☐
  - Assemblies ☐
  - Products ☐
- Testing:
  - Parts, subassemblies, or products ☐
- Calibrating instruments, apparatus, or devices ☐
- Other (specify) ☐

Plans or determines:
- Manpower requirements ☐
- Work schedules ☐
- Production schedules ☐
- Worker schedules ☐
- Worker training activities ☐
- Testing activities ☐
- Inspection activities ☐
- Calibration activities ☐
- Other (specify) ☐

- Prepares work schedules ☐
- Assigns workers to specific duties ☐
- Gives work directions to workers concerning assigned duties ☐
- Inspects random samples of work for conformance with specifications and standards ☐
- Interprets production orders, specifications, drawings and technical data for workers ☐
- Advises workers on methods and procedures for solving work problems ☐
- Enforces worker compliance with established work practices, regulations, and safety rules ☐
- Evaluates worker performance ☐
- Recommends personnel actions, such as promotion, discharge, or disciplinary actions ☐
- Requisitions materials, tools, parts, and equipment ☐
- Keeps production and work records ☐
- Prepares production reports ☐
- Trains workers in:
  - Setup and operation of machines or equipment to fabricate or process parts ☐
  - Subassembly methods and procedures ☐
  - Inspection methods and procedures ☐
  - Testing methods and procedures ☐
  - Calibration of instruments and apparatus ☐
  - Reworking defective materials, parts, and assemblies ☐
  - Repairing instruments, apparatus, or equipment not meeting specification ☐
  - Fabricating and assembling prototype parts and models of products ☐
  - Other (specify) ☐

- Coordinates work activities with activities of other departments ☐
- Reads, analyzes, or reviews:
  - Product specifications ☐
  - Production orders ☐
  - Fabrication specifications ☐
  - Assembly instructions and specifications ☐
  - Blueprints ☐
  - Engineering drawings or sketches ☐
  - Operational specifications of products ☐
  - Inspection report ☐
  - Testing reports ☐
  - Rework orders ☐
  - Salvage procedures ☐
  - Other (specify) ☐

- Determines from data:
  - Material requirements ☐
  - Material specifications ☐
  - Machine fabricating operations required ☐
  - Hand fabricating operations ☐
  - Work aids required ☐
  - Subassembly procedures and sequences ☐
  - Product assembly procedures and sequences ☐
  - Inspection requirements ☐
  - Testing requirements ☐
  - Calibration methods and procedures ☐
  - Product rework or repair requirements ☐
  - Other (specify) ☐

- Sets up machines and equipment for other workers ☐
- Sets up and operates machines ☐
- Controls operation of machines or equipment ☐
- Tends machines or equipment setup by others ☐
- Other (specify) ☐

- Obtains machine fixtures, holding devices, tools, and work aids for required operations ☐
- Installs, aligns, and secures:
  - Machine fixtures, holding devices, or tools in or onto machine ☐
  - Dies or die sets ☐
  - Workpiece in machine or holding device ☐
  - Machine stops and guides ☐
  - Tools in toolholders, chucks, or spindles ☐
  - Other (specify) ☐

- Moves controls or levers to:
  - Set machining speeds ☐
  - Set speed of rotation of workpiece or machine ☐
  - Set timers or temperatures for specified operations ☐
  - Set pressure requirements for press operations ☐
  - Position tool in relationship to workpiece ☐
  - Feed tool onto workpiece ☐
  - Start and stop machine or equipment ☐
  - Readjust machine or equipment operation ☐
  - Other (specify) ☐

- Lays out on workpiece:
  - Reference lines and points ☐

- Location of holes ☐
- Dimensional specifications ☐
- Optical element machining directions ☐
- Pattern outline ☐
- Cutting lines ☐
- Bending and forming lines ☐
- Contour and profile of part ☐
- Other (specify) ☐

Fabricates instrument, apparatus, or equipment parts by such methods, as:
- Machining ☐
- Bending ☐
- Forming ☐
- Winding ☐
- Die drawing ☐
- Grinding ☐
- Lapping ☐
- Polishing ☐
- Etching ☐
- Engraving ☐
- Glass blowing ☐
- Electroforming ☐
- Painting ☐
- Electroplating ☐
- Encapsulating ☐
- Filling ☐
- Charging ☐
- Heat treating ☐
- Crimping ☐
- Staking ☐
- Cutting ☐
- Stripping ☐
- Glazing ☐
- Sizing ☐
- Covering ☐
- Tempering ☐
- Other (specify) ☐

Prepares for assembly of parts, subassemblies, and products by:
- Obtaining specified parts, materials, and assemblies ☐
- Selecting holding devices, tools, and work aids for specified assembly ☐
- Arranging materials, tools, and work aids on work station ☐
- Other (specify) ☐

Assembles parts or products by:
- Placing or positioning:
  - Holding device, fixture, or jig specified for assembly function ☐
  - Base plate, housing, or part in device ☐
  - Inter-related parts in specified alinement and relationship to each other ☐
- Setting specified clearances between moving parts ☐
- Fastening or securing parts in place, using:
  - Clamps ☐
  - Screws ☐
  - Rivets ☐
  - Nuts and bolts ☐
  - Crimping or staking tools ☐
  - Solder ☐
  - Brazes ☐
  - Welds ☐
  - Adhesives ☐
  - Plastic Compound ☐
  - Other (specify) ☐
- Comparing assembly with sample assembly ☐
- Connecting and securing pins or wires to terminals ☐
- Installing:
  - Gear train ☐
  - Subassemblies ☐
  - Mechanical units ☐
  - Electrical units ☐
  - Optical elements ☐
  - Electronic elements ☐
- Attaching hands or needle points on dial faces ☐
- Securing cover or housing on unit, assembly or product ☐
- Other (specify) ☐

Inspects materials, parts, or assemblies for such defects, as:
- Burrs ☐
- Nicks ☐
- Scratches ☐
- Pitted plating ☐
- Cracks ☐
- Optical power ☐
- Loose connections ☐
- Faulty welds, brazes, or soldering ☐
- Faulty assembly ☐
- Binding of moving parts ☐
- Other (specify) ☐

Measures parts for conformance with specifications for:
- Length ☐
- Width ☐
- Height ☐

- Expansion of bellows ☐
- Contraction of bellows ☐
- Thickness of coating or plating ☐
- Other (specify) ☐

Tests part, assembly, or product by:
- Connecting to testing equipment or machine ☐
- Setting controls for specified:
  - Temperature ☐
  - Current or voltage ☐
  - Pressure ☐
  - Vacuum ☐
  - Speed ☐
- Starting equipment and observing:
  - Readings on gages and meters of testing equipment ☐
  - Readings of instrument under test ☐
  - Action of instrument for specified performance ☐
  - Instrument for evidence of malfunctioning ☐
  - Instrument for need of calibration ☐
- Immersing:
  - Part in water to detect leaks ☐
  - Instrument in water of known temperature to insure accuracy of measurement ☐
  - Instrument in liquid solution of known gravity to insure accuracy of reading ☐
- Records nature of tests and results in testing log ☐
- Analyzes test data to determine cause of malfunction ☐
- Enters cause of defect on rejection tag ☐
- Routes product for rework or salvage of usable parts ☐
- Other (specify) ☐

alibrates instruments by:
- Connecting or installing instrument in calibrating machine or equipment ☐
- Starting equipment or machine ☐
- Observing indicator lights and gages on test panel board ☐
- Reading of meters or gages on instrument under test ☐
- Recording:
  - Temperatures at which controls or contacts react ☐
  - Pressures at which instrument operates ☐
  - Electrical resistance or other characteristic ☐
- Computing:
  - Differentials in degrees of temperatures ☐
  - Differentials in pressures ☐
  - Values of required resistance ☐
- Adjusting calibration screws ☐
- Resetting tension on springs ☐
- Adjusting bearings on calibrating arm ☐
- Adding weight to calibrating arm ☐
- Soldering wire of calibrating arm to bearing ☐
- Adding required ballast ☐
- Bending contacts for specified length of travel ☐
- Adjusting meshing of gears in gear trains ☐
- Repositioning magnet ☐
- Other (specify) ☐

Reworks:
- Parts to remove defects by:
  - Filing ☐
  - Grinding ☐
  - Scraping ☐
  - Lapping ☐
  - Polishing ☐
  - Burnishing ☐
  - Straighting ☐
  - Replating ☐
  - Recoating ☐
  - Recoloring ☐
- Assemblies and products by:
  - Disassembling unit or product ☐
  - Examining parts, connections, and assembly ☐
  - Moving parts to insure freedom of movement ☐
  - Measuring parts for conformance with dimensional specifications ☐
  - Measuring clearances between parts ☐
  - Testing continuity of circuitry between parts ☐
  - Removing and replacing defective parts ☐
  - Soldering loose connections ☐
  - Resetting clearances ☐
  - Reassembling product or unit ☐
- Other (specify) ☐

- Records rework activities and type or cause of defect ☐
- Routes reworked assembly or product for testing or calibration ☐

- Routes rejected products for salvage of usable parts ☐
- Salvages and sorts usable parts ☐
- Salvages and sorts usable products ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Other Supervisors ☐
- Quality Control Personnel ☐
- Engineering Personnel ☐
- Workers ☐
- Helpers ☐
- Laboratory Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- Vocational School ☐
- Technical School ☐
- Apprenticeship ☐
- Military Schooling ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop a worker's skills.

Related Trade Theory:

Mathematics:

- Review and Basic Slide Rule ☐
- Basic Rules of Algebra ☐
- Solution of Irregularities ☐
- Graphing ☐
- Remainder Theorem ☐
- Slope of a Line ☐
- The Derivative ☐
- Applications Involving Maxima Minima ☐
- Applications of Negative, Fractional and Zero Components ☐
- Exponential and Logarithmic Equations ☐
- Sequences ☐
- Fundamental Principles of Permutations and Combinations ☐
- Probability [illegible]uality Control ☐
- Functions ☐
- Areas ☐
- Rates, Derivatives, and Integration ☐
- Volumes and Solids ☐
- The LaPlace Transformation ☐
- Other (specify) ☐

Physics:

- Forces and Components ☐
- Engineering Characteristics of Common Materials ☐
- Rectilinear Motion in a Horizontal Plane ☐
- Nonlinear Motion ☐
- Work and Energy ☐
- Simple Harmonic Motion ☐
- Temperatures, Measurements, and Scales ☐
- Heat Energy ☐
- Transfer of Heat Energy ☐
- Thermal Properties of Materials ☐
- Gas Flow ☐
- Hydrodynamics ☐
- Hydrostatics ☐
- The Magnetic Field ☐
- The Electro-Magnetic Field ☐
- Magnetic Properties of Matter ☐
- Induced Electromotive Forces ☐
- Coulomb's Law ☐
- The Electric Field ☐
- Electric Potential ☐
- Capacitance Properties of Dielectrics ☐
- Electrochemistry and Thermoelectricity ☐
- Electronics ☐
- Elementary Solid State Physics ☐
- Sound-Wave Motion ☐
- Sound-Vibrating Bodies ☐
- The Nature and Propagation of Light ☐
- Lenses and Lens Aberrations ☐
- Optical Instruments ☐

- Mirrors
- Photoelectric-Photoresistive and Photovoltaic Devices
- Diffraction and Polarization
- Other (specify)

Electrical Circuits AC and DC:
- Resistance Calculations-Ohm's Law
- Series and Parallel Circuits
- Networks
- Electric Fields and Capacitance
- Magnetic Fields and Inductance
- Meters
- Sine Wave
- Series Circuits, AC
- Parallel Circuits, AC
- Polyphase Circuits
- Other (specify)

Electronics:
- Vacuum Tubes
- Semiconductor Characteristics
- Power Supplies
- Audio Amplifiers
- Tuning Circuits
- Radio-Frequency Amplifiers
- Detector Circuits
- Electronic Instruments
- Other (specify)

Technical Reporting:
- Diagnostic Tests
- Technical Sketching
- Dimensional Drawing
- Pictorial Drawing
- Electrical and Electronic Symbols
- Instrumentation Symbols
- Sketch of Simple Instrumentation-Installation
- Graphical Presentation of Data
- The Engineering Report
- Other (specify)

Communication skills:
- Sentence Structure
- Using Resource Materials
- Written Expression
- Talking and Listening
- Improving Reading Efficiency
- Other (specify)

- General and Industrial Economics
- Industrial Organizations and Institutions
- Facilities, Equipment, and Costs
- Chemistry for Instrumentation
- Psychology and Human Relations
- Numerical Control
- Analytical Techniques in Systems Control
- Guidance and Control Techniques
- Microminiaturization Problems and Techniques
- Development of Supervisory Capabilities
- Other (specify)

Instrumentation Technology:

Mechanical Measuring Principles:
- Review of Basic Principles
- Pressure Gages
- Liquid and Gas Flow Measurement
- Temperature Measurements
- Humidity Instruments
- Specific Gravity Measurements
- Viscosity Measurements
- Other (specify)

Electrical Measuring Principles:
- Review of Fundamentals
- Electrical Pressure Transducers
- Electrical Flow Devices
- Electrical Level Transducers
- Electrical Temperature Transducers
- Potentiometric Devices
- Indicating, Recording, and Registering Equipment
- Analytical Instruments
- Radiation Type Instruments
- Humidity-Measuring Devices
- Other (specify)

Instrument Shop Practices:
- Safety Rules and Precautions
- Organization and Function
- General Classifications of Instruments
- Records Required
- Test Fixtures
- Assembly of Common Mechanical and Pneumatic Instruments
- Performance Tests
- Other (specify)

Control Principles and Telemetry:
- What Constitutes a Process
- Process Characteristics:
  - Static Conditions
  - Kinetic Conditions
- Responses of Components and Systems
- Energy Characteristics of the Process
- Feedback Control System:
  - Closed Loop
  - Open Loop

- Pneumatic and Hydraulic Controllers and Final Operators [ ]
- Other (specify) [ ]

Calibration and Standardization:
- Calibration to Laboratory Standards [ ]
- Calibration to Plant Standards [ ]
- Calibration and Adjustment of:
  - Mechanical Instruments [ ]
  - Pneumatic Instruments [ ]
  - Electrical Instrument:
    - Pressure [ ]
    - Temperature [ ]
    - Flow [ ]
    - Level [ ]
    - Pressure Transmitters [ ]
    - Voltmeters-Ammeters [ ]
    - Potentiometers [ ]
    - Portable Instruments [ ]
  - Other (specify) [ ]

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:
- Machine tools:
  - Lathes [ ]
  - Milling machines [ ]
  - Shapers [ ]
  - Routers [ ]
  - Drill presses [ ]
  - Surface grinders [ ]
- Metal forming machines:
  - Bending machine [ ]
  - Brake [ ]
  - Draw roll machine [ ]
  - Forming roll [ ]
  - Presses:
    - Arbor press [ ]
    - Hydraulic press [ ]
    - Straightening press [ ]
    - Punch press [ ]
    - Stamping press [ ]
  - Shears [ ]
- Saws [ ]
- Pumps [ ]
  - Vacuum pumps [ ]
- Other (specify) [ ]

Tools:
- Pliers [ ]
- Screwdrivers [ ]
- Wrenches [ ]
- Files [ ]
- Scrapers [ ]
- Tweezers [ ]
- Wire cutters [ ]
- Wire strippers [ ]
- Crimping tools [ ]
- Staking tools [ ]
- Scissors [ ]
- Flaring tools [ ]
- Flanging tools [ ]
- Scribers [ ]
- Soldering iron [ ]
- Soldering gun [ ]
- Pipe wrenches [ ]
- Hammers [ ]
- Power handtools [ ]
- Other (specify) [ ]

Equipment:
- Chemical etching [ ]
- Heat treating [ ]
- Tempering [ ]
- Induction:
  - Welding [ ]
  - Brazing [ ]
- Scales:
  - Beam Scales [ ]
  - Laboratory scales [ ]
- Ovens [ ]
- Furnaces [ ]
- Welding equipment:
  - Flash [ ]
  - Spot [ ]
  - Seam [ ]
- Other (specify) [ ]

Work Aids:
- Measuring devices:
  - Balance gage [ ]
  - Center gage [ ]
  - Dial indicator [ ]
  - Feeler gage [ ]
  - Height gage [ ]
  - Plug gage [ ]
  - Surface plate [ ]
  - Thickness gage [ ]
  - Thread gage [ ]
  - Wire gage [ ]
  - Gage blocks:
    - Johannsen blocks [ ]
    - Parallel blocks [ ]

- V-blocks ☐
- Micrometers: ☐
  - Depth micrometer ☐
  - Flange micrometer ☐
  - Inside micrometer ☐
  - Outside micrometer ☐
- Straightedges ☐
- Depth rules ☐
- Optical comparator ☐
- Meters:
  - Potentiometer ☐
  - Manometer ☐
  - Tachometer ☐
  - Galvanometer ☐
  - Dynanometer ☐
  - Frequency meter ☐
  - Photometer ☐
  - Ammeter ☐
  - Voltmeter ☐
  - Multimeter ☐
  - Light meter ☐
  - Spectrophotometer ☐
  - Spectrometer ☐
  - Densitometer ☐
  - Thermometer ☐
- Other (specify) ☐

- Loupes ☐
- Oscilloscope ☐
- Binocular microscope ☐
- Stress-strain recorder ☐
- Hydraulic test equipment ☐
- Ultrasonic test equipment ☐
- Electrical test equipment ☐
- Electronic test equipment ☐
- Bridge gages ☐
- Physical characteristics test equipment ☐
- Calibrating equipment ☐
- Other (specify) ☐

- Acceptance slips ☐
- Approval slips ☐
- Rejection slips ☐
- Blueprints ☐
- Engineering drawings ☐
- Inspection reports ☐
- Inspection orders ☐
- Records ☐
- Production orders ☐
- Production reports ☐
- Formulas ☐
- Flight simulation equipment ☐
- Fabricating specifications ☐
- Assembly specifications ☐
- Sample assemblies ☐
- Holding devices ☐
- Jigs ☐
- Fixtures ☐
- Schedules ☐
- Calibration standards ☐
- Salvage reports ☐
- Rework reports ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate use, type, or instrument, apparatus, or equipment.

Instrument, Apparatus, Device Uses:

- Aeronautical ☐
- Commercial ☐
- Dental ☐
- Drafting ☐
- Engineering ☐
- Industrial ☐
- Laboratory:
  - Chemical laboratory ☐
  - Clinical laboratory ☐
  - Pathological laboratory ☐
  - Research laboratory ☐
  - Testing laboratory ☐
- Mathematical ☐
- Meteorological ☐
- Medical ☐
- Navigation ☐
- Nautical ☐
- Photogrammetry ☐
- Scientific ☐
- Surgical ☐
- Surveying ☐
- Other (specify) ☐

Types of Instruments, Apparatus, and Devices:

- Accoustical ☐
- Electromechanical ☐
- Electrical ☐
- Electronic ☐
- Electrical-electronic ☐
- Electro-optical ☐
- Electromagnetic ☐
- Mechanical ☐
- [illegible]hanical-optical ☐
- Optical ☐
- Pneumatic ☐

- Ultrasonic ☐
- Other (specify) ☐

Analyzing Instruments, Equipment:
- Dust sampling and analyzing equipment ☐
- Electrical characteristics testing analyzers:
  - Internal combustion engines ☐
  - Radio apparatus ☐
  - Electron tube ☐
- Gas analyzers ☐
- Nuclear monitoring pulse analyzers ☐
- Optical analysis equipment ☐
- Petroleum analysis equipment ☐
- Physical properties analysis equipment ☐
- Spectrum analyzers ☐
- Telegraph distortion analyzer ☐
- Thermomagnetic oxygen analyzer ☐
- Waveform analyzing equipment ☐
- Other (specify) ☐

Computing Instruments, Equipment:
- Mathematical integrators ☐
- Percentage correctors ☐
- Wind correctors ☐
- Aircraft engine fuel totalizers ☐
- Gun data computers ☐
- Slide rules ☐
- Other (specify) ☐

Controlling Instruments:
- Aircraft engine synchronizers ☐
- Air traffic control systems ☐
- Bimetallic element controls ☐
- Combustion controls ☐
- Control receivers ☐
- Control systems ☐
- Digital command units ☐
- Engine bleeding control cabinets ☐
- Fire control equipment ☐
- Fuel mixture controls ☐
- Gas governors ☐
- Gas regulators ☐
- Heat regulators ☐
- Hydraulic system controls ☐
- Inertial guidance systems ☐
- Liquid flow controls ☐
- Liquid level controls ☐
- Missile control systems ☐
- Nuclear reactor controls ☐
- Oxygen regulators ☐
- Pressure regulators:
  - Bellows tube type ☐
  - Bourdon tube type ☐
  - Diaphragm type ☐
- Revolution controls ☐
- Sequential controls ☐
- Telemetery equipment ☐
- Thermostatic controls ☐
- Thermostats ☐
- Timing controls ☐
- Other (specify) ☐

Counting Instruments, Equipment:
- Electro gamma ray loggers ☐
- Gieger counters ☐
- Lineal tallying registers ☐
- Revolution counters ☐
- Turnstile counters ☐
- Tally registers ☐
- Other (specify) ☐

Detecting Instruments, Equipment:
- Electronic field detection apparatus ☐
- Electronic control detection systems ☐
- Fire detection apparatus ☐
- Infra-red object detection apparatus ☐
- Light and heat detection apparatus ☐
- Mine detectors, electronic ☐
- Magnetic field detectors ☐
- Nuclear radiation detectors and monitors ☐
- Personnel dosimetry devices ☐
- Probes:
  - Immersion temperature probes ☐
  - Temperature probes ☐
  - Aerodynamic probes ☐
- Radar object detection apparatus ☐
- Radio field strength detectors ☐
- Scintillation detectors ☐
- Sensing devices ☐
- Sound detection equipment ☐
- Stress, strain, and flaw detector apparatus ☐
- Underwater sound detection equipment ☐
- Other (specify)

Directing Instrument, Equipment:
- Compasses:
  - Magnetic compasses ☐
  - Gyrocompasses ☐
  - Radio compasses ☐
- Radio beams ☐
- Radio direction finders ☐
- Gun directors ☐
- Loran equipment ☐
- Other (specify) ☐

Indicating Instruments:
- Acceleration indicator ☐
- Airspeed indicator ☐

- Angle of attack indicator ☐
- Angle of yaw indicator ☐
- Combustion indicator ☐
- Drift indicator ☐
- Electrical characteristics indicator ☐
- Glide slope indicator ☐
- Horizontal flight indicator ☐
- Hydraulic pressure indicator ☐
- Omni bearing indicator ☐
- Pictorial position indicator ☐
- Physical characteristics indicator ☐
- Position indicator:
  - Landing gear position ☐
  - Cowl flap position ☐
  - Stabilizer position ☐
- Radiomagnetic indicator ☐
- Rate of climb indicator ☐
- Salinity indicator ☐
- Other (specify) ☐

Measuring Instruments, Equipment:

- Gages:
  - Acidity gages ☐
  - Alkalinity gages ☐
  - Combustion gages ☐
  - Density gages ☐
  - Humidity gages ☐
  - Liquid level gages ☐
  - Liquid flow gages ☐
  - Pressure gages ☐
  - Temperature gages ☐
  - Bridge gages:
    - Kelvin ☐
    - Megohm ☐
    - Vacuum tube ☐
    - Wheatstone ☐
  - Other (specify) ☐

- Meters:
  - Accelerometers ☐
  - Ammeters ☐
  - Audiometers ☐
  - Barometers:
    - Aneroid ☐
    - Mercury ☐
  - Colorimeters ☐
  - Condensate meters ☐
  - Decibel meters ☐
  - Demand meters ☐
  - Dynamometers ☐
  - Drift meters ☐
  - Fathomers ☐
  - Fuel meters ☐
  - Gas meters ☐
  - Galvanometers ☐
  - Gasoline dispensing meters ☐
  - Hydrometers ☐
  - Inclinometers ☐
  - Integrating meters ☐
  - Mach meters ☐
  - Manometers ☐
  - Moisture density meters ☐
  - Odometers ☐
  - Ohmmeters ☐
  - Phase angle meters ☐
  - Ph meter ☐
  - Photometer ☐
  - Photopitometers ☐
  - Pitometers ☐
    - Pitot tubes ☐
  - Planimeters ☐
  - Power factor meters ☐
  - Potentiometers ☐
  - Pyrometers ☐
  - Refractometers ☐
  - Reflectometers ☐
  - Radio field strength meters ☐
  - Seismometers ☐
  - Spectrometers ☐
  - Speedometers ☐
  - Tachometers ☐
  - Thermometers ☐
  - Titrometers ☐
  - Turbidometers ☐
  - Turbine flow meters ☐
  - Voltmeters ☐
  - Watt meters:
    - Watt hour meters ☐
    - Watt hour and demand meters ☐
    - Watt hour and timeswitch meters ☐
  - Water meters ☐
  - Other (specify) ☐

Precision Mechanical Measuring Instruments:

- Angle rings ☐
- Calipers ☐
- Dividers ☐
- Gage blocks ☐
- Micrometers ☐
- Optical comparators ☐
- Verniers ☐
- Surface plates ☐
- Other (specify) ☐

Sighting and Viewing Instruments:

- Binoculars ☐
- Bomb sights ☐
- Bore scopes ☐

- Chronoscopes ☐
- Field glasses ☐
- Gun sights ☐
- Height finders ☐
- Microprojectors ☐
- Microscopes ☐
- Optical Interferometers ☐
- Periscopes ☐
- Polariscopes ☐
- Range finders ☐
- Reflectoscopes ☐
- Shadowgraphs ☐
- Spectroscopes ☐
- Spy glasses ☐
- Telescopes ☐
- Other (specify) ☐

Testing Instruments, Apparatus, Equipment:

- Aircraft hydraulic control testing units ☐
- Coal testing apparatus ☐
- Circuit digital testing equipment ☐
- Electrical characteristic test equipment:
  - Electrical quantities ☐
  - Resistance ☐
  - Voltage ☐
- Environmental testing equipment ☐
- Electron tube testing equipment ☐
- Ignition harness testing equipment ☐
- Ignition testing equipment ☐
- Kinematic testing and measuring equipment ☐
- Physical characteristics testing equipment:
  - Abrasion tester ☐
  - Burst tester ☐
  - Ductility tester ☐
  - Elongation tester ☐
  - Hardness tester ☐
  - Material fatigue tester ☐
  - Shear strength tester ☐
  - Tensile strength tester ☐
  - Torque tester ☐
  - Torsion tester ☐
- Pump testing units ☐
- Microwave testing equipment ☐
- Semiconductor test equipment ☐
- Sewage testing equipment ☐
- Turntable indicator tester ☐
- Other (specify) ☐

Medical Instruments, Apparatus, Equipment:

- Bronchoscopes ☐
- Cystoscopes ☐
- Gastroscopes ☐
- Ophthalmic:
  - Trail cases ☐
  - Ophthalmometers ☐
  - Ophthalmoscopes ☐
  - Corneal microscopes ☐
  - Slit lamps ☐
  - Muscle exercise apparatus ☐
- Optometers ☐
- Pelvimeters ☐
- Speculums ☐
- Sphygomanometer ☐
- Tonometer ☐
- Stethoscopes ☐
- Stethographs ☐
- Anesthesia apparatus ☐
- Anthropometrical apparatus ☐
- Blood typing equipment ☐
- Blood transfusion equipment ☐
- Bone drills ☐
- Bone rongeurs ☐
- Forceps ☐
- Hypodermics ☐
- Inhalators ☐
- Surgical:
  - Knives ☐
  - Needle holders ☐
  - Saws ☐
  - Probes ☐
- Suture needles ☐
- Operating tables ☐
- Trocars ☐
- Physician's diagnostic equipment ☐
- Dental instruments and apparatus ☐
- Veterinarian instruments and apparatus ☐
- Other (specify) ☐

Surveying Instruments:

- Alidades ☐
- Transits ☐
- Levels ☐
- Theodolities ☐
- Plumb bobs ☐
- Rods ☐
- Chains ☐
- Tapes ☐
- Other (specify) ☐

Laboratory Apparatus and Equipment:

- Bunsen burners ☐
- Centrifuges ☐
- Furnaces ☐
- Flasks ☐

- Ovens ☐
- Scales ☐
- Incubators ☐
- Distilling equipment ☐
- Colormetric hydrogen ion equipment ☐
- Laser instruments ☐
- Maser instruments ☐
- Laser beam alinement devices ☐
- Magnetic idealization generators ☐
- Pellicle mirrors ☐
- Vacuum pumps ☐
- Standards and calibrating equipment ☐
- Amplifiers for nuclear reactors ☐
- Micromanipulators ☐
- Nuclear radiation sample changers ☐
- Nucelar radiation scalers ☐
- Other (specify) ☐

Miscellaneous Instruments, Apparatus, Equipment:

- Audio frequency oscillators ☐
- Radio frequency oscillators ☐
- Oscillographs ☐
- Pulse signal generators ☐
- Microwave signal generators ☐
- Telephone pressurization units ☐
- Accelerating wave guide structures ☐
- Counter measure simulators ☐
- Digital encoders ☐
- Flight simulators ☐
- Hydrophones ☐
- Light and heat emission operating equipment ☐
- Pulsed electron guns ☐
- Railing signaling devices ☐
- Sound signaling devices ☐
- Television monitors ☐
- Time decoders ☐
- Traffic signals ☐
- Transponders ☐
- Weapon simulators ☐
- Chromatographic equipment ☐
- Cinetheodolites ☐
- Contour projectors ☐
- Dyna-lens ☐
- Electron microprobes ☐

Magnifying instruments:

- Binocular microscopes ☐
- Loupes ☐
- Photomicrographic apparatus ☐
- Polarizers ☐
- Prisms ☐
- Spectographs ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐

Commercial:

- Business Service ☐
- Food and Beverage ☐
- Lodging Service ☐
- Personal Service ☐
- Printing and Publishing ☐
- Repair Service ☐
- Sales ☐

- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

KNITTING MILL WORK

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates mill activities concerned with manufacturing of:
- Knitted:
  - Fabrics ☐
  - Women's hosiery ☐
  - Hose, stockings, and socks ☐
  - Outerwear ☐
  - Underwear ☐
  - Articles other than wearing apparel (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Setting up, adjusting, and repairing machines and/or equipment ☐
- Operating or controlling machines or equipment to:
  - Process or prepare yarn for knitting operation ☐
  - Knit parts of or complete products ☐
  - Assemble knitted parts into finished product ☐
  - Dye products specified color ☐
  - Finish or convert fabric or product ☐
- Boarding of products ☐
- Labeling or marking products ☐
- Inspecting products ☐
- Reworking defective products ☐
- Pressing, boxing, and/or packaging of products ☐
- Quality control operations ☐
- Other (specify) ☐

Studies, reviews, or analyzes:
- Production schedules ☐
- Material specifications ☐
- Processing specifications ☐
- Fabric specifications ☐
- Product specifications ☐
- Schedules ☐
- Other (specify) ☐

Determines:
- Processing sequences and requirements ☐
- Fiber preparation requirements ☐
- Yarn size, type, texture, and quantity required for each product ☐
- Setup of machines and equipment for manufacturing product ☐
- Knitting machine pattern chains ☐
- Dyeing requirements ☐
- Product finishing or converting operations ☐
- Quality control requiremeats ☐

- Manpower requirements ☐
- Other (specify) ☐

Prepares:
- Warp pattern sheets ☐
- Machine or equipment setup directions ☐
- Processing schedules ☐
- Work schedules ☐
- Reports ☐
- Other (specify) ☐

Assigns workers to specific duties ☐

Interprets production orders, product specifications, and technical data for workers ☐

Gives workers directions for performing assigned duties ☐

Advises workers on methods and procedures for solving work problems ☐

Reviews inspection and test reports ☐

Orders changes in processing operations for correcting defects ☐

Coordinates department activities with those of other departments ☐

Requisitions materials and supplies ☐

Trains workers in:
- Setup, adjustment, and maintenance of machines and equipment ☐
- Operation of machines and equipment ☐
- Performing assigned duties ☐

Notifies maintenance personnel of needed machine or equipment repairs ☐

Enforces worker compliance with established:
- Work procedures ☐
- Company regulations ☐
- Safety rules and regulations ☐

Observes workers performing duties for compliance with work directions ☐

Keeps processing or production records ☐

Other (specify) ☐

Sets up machines or equipment for other workers ☐

Sets up and operates machines ☐

Operates machines ☐

Controls operation of processing equipment ☐

Tends mill machines, machinery, or equipment ☐

Assists in operation of machines or equipment ☐

Feeds materials or inprocess products into machines or equipment ☐

Offbears materials or products from machines or equipment ☐

Other (specify) ☐

Reads setup instructions for specified machine operation ☐

Determines from instructions:
- Arrangement of pattern plates on chain ☐
- Plate perforations requiring covering ☐
- Gears, cams, buttons, links, or needle packs requiring change ☐
- Temperatures, pressures, vacuum setting ☐
- Machine settings ☐
- Other (specify) ☐

Disassembles and/or removes from machine or equipment:
- Rollers ☐
- Pulleys ☐
- Pattern chains ☐
- Gears and cams ☐
- Beam ☐
- Rolls ☐
- Guides ☐
- Bars ☐
- Other (specify) ☐

Selects specified replacement parts or accessory equipment ☐

Installs, alines, sets clearances, and secures parts and/or equipment ☐

Inserts cams, links, buttons, and needle packs in pattern plates or chain ☐

Turns setscrews, handwheels, or controls to:
- Obtain:
  - Specified clearances between moving parts ☐
  - Specified spacing of knives on cutting shaft ☐
  - Specified tension on materials ☐
  - Specified pressure on materials ☐
- Regulate:
  - Speed of feed rollers ☐
  - Operating:
    - Pressures ☐
    - Vacuums ☐
    - Temperatures ☐
- Synchronize speed of:
  - Yarn carriers ☐
  - Dividers ☐
  - Needles ☐
  - Sinkers ☐
  - Machine or equipment units with other units ☐

- Admit:
  - Steam in box or heating coils ☐
  - Water into mixing tank or drum ☐
- Adjust:
  - Width of spreaders or tension guides ☐
  - Operation of machine or equipment to correct manufacturing defects ☐
- Start or stop machine or equipment operations ☐
- Other (specify) ☐

Threads or pulls yarn, material, or product:
- Through:
- Onto:
- Over:
- Under:
- Between:
  - Drop wires ☐
  - Tension devices ☐
  - Stop motion devices ☐
  - Measuring devices ☐
  - Spreading devices ☐
  - Needle eyes ☐
  - Feed rolls ☐
  - Pressure rolls or rollers ☐
  - Guides ☐
  - Rotary knives ☐
  - Arm of machine ☐
  - Forms ☐
  - Head blocks ☐
  - Guide or other bars ☐
- Other (specify) ☐

Positions or places:
- Creel ☐
- Bars or rods for knitting operations or looping operations, as:
  - Transfer bar ☐
  - Picot bar ☐
  - Needle bar ☐
  - Welt bar ☐
  - Welt rod ☐
- Roll of material on shaft, stand, or feed rod ☐
- Tube, bobbin, or cone on takeup or winding roll ☐
- Garment on sized model form ☐
- Hosiery on inspection boards ☐
- Other (specify) ☐

Removes:
- Basting stitches or loose threads ☐
- Garments at end of steaming cycle ☐
- Stains or spots from garments ☐
- Other (specify) ☐

Inspects or examines:
- Yarn in creel for conformance with warp pattern specifications ☐
- Products for conformance with knitting specifications ☐
- Inprocess and finished products for:
  - Knitting defects, as:
    - Holes ☐
    - Runs ☐
    - Uneven selvedges ☐
    - Loose threads ☐
    - Mispicks ☐
    - Slub runs ☐
    - Torn threads ☐
    - Dropped stitches ☐
  - Dyeing defects, as:
    - Shaded parts ☐
    - Dye streaks ☐
    - Color variations ☐
  - Looping defects ☐
  - Seaming defects ☐
    - Open seams ☐
    - Twisted straps ☐
  - Misplacement of:
    - Pockets ☐
    - Loops ☐
    - Buttons ☐
  - Stains or dirt on products ☐
- Assembly defects in:
  - Fit and hang of garment, as:
    - Wrinkles ☐
    - Puckers ☐
    - Bulges ☐
  - Positioning of:
    - Fasteners ☐
    - Buttonholes ☐
    - Trimming and decorations ☐
  - Loose buttons or fasteners ☐
- Other (specify) ☐

Marks:
- Position for buttonholes and fasteners on garment ☐
- Knitted garments along pattern for cutting operations ☐
- Defects for:
  - Rework, such as:
    - Mending ☐
    - Darning ☐
    - Repositioning misplaced buttons, pockets, or fasteners ☐
    - Re-looping ☐
  - Cutting out of defects in knitting ☐
- Other (specify) ☐

Tests:
- Textile fibers and yarns for conformance with specifications for:
  - Tensile strength ☐
  - Size ☐
  - Twists per inch ☐
- Solutions for specified:
  - Strength ☐
  - Concentration ☐
- Dyes for conformance with color standards ☐
- Hosiery for:
  - Conformance with quality control standards ☐
  - Obtaining data for establishing quality standards for new types or styles ☐
  - Stretch characteristics of:
    - Welt ☐
    - Knee ☐
    - Ankle ☐
    - Instep ☐
  - Tensile strength at knee ☐
- Other (specify) ☐

Measures:
- Width of material ☐
- Garments to determine size ☐
- Undyed hose to ascertain if size meets specifications ☐
- Hosiery to determine size ☐
- Other (specify) ☐

Weighs:
- Chemicals and dyes following formula ☐
- Dozen lots of knitted garments ☐
- Other (specify) ☐

Cuts:
- Notches in material to indicate length of front opening ☐
- Defects from material or products ☐
- Loose threads and excess material from products ☐
- Connecting threads between material for garment openings ☐
- Other (specify) ☐

Hand:
- Reworks defects in knitted products ☐
- Ties broken yarn ends together ☐
- Presses pattern outline onto knitted garments parts to mark arm or neck openings ☐
- Crochets decorative designs or trim on knotted products ☐
- Blocks knitted headwear ☐
- Folds products for packaging or boxing ☐
- Stacks:
  - Folded garments between boards ☐
  - Folded garments in trays ☐
- Trucks materials or products within mill ☐
- Sorts products according to size, grade, and style ☐
- Other (specify) ☐

Observes machine or equipment operation for:
- Conformance with operational specifications ☐
- Yarn or thread breaks ☐
- Operating malfunctions ☐
- Need for adjustment ☐
- Exhausted yarn packages ☐
- Other (specify) ☐

Assembles and installs metal chains that control knitting machine operations

Studies specifications of new pattern and sample fabric

Determines:
- Arrangement of pattern plates on chain ☐
- Perforations in pattern plate requiring covering ☐
- Selects pattern chain links according to pattern diagram ☐
- Marks links according to sequence in chain ☐
- Inserts connecting pins through holes in links to assemble chain ☐
- Installs pattern chain and plates in machine ☐
- Makes trial run on machine to insure knitting meets specifications ☐
- Readjusts cams, gears, or control devices as required ☐
- Other (specify) ☐

Builds boards (forms) ☐
- Measures and cuts canvas to cover wire frame ☐
- Positions and tightens canvas over wire frame and sews it in place ☐
- Sews binding tape at edges to strengthen board ☐
- Other (specify) ☐

Repairs looping machine:
- Replaces and alines worn, bent, or broken looper points and needles ☐
- Replaces and adjusts:
  - Clipper blade ☐
  - Trimmer blade ☐
  - Changes pulleys and belts, as required ☐
- Other (specify) ☐

Casts needle or thread guide assemblies:
- Selects size and type of mold specified ☐
- Positions needle or thread guides in mold slots and closes mold ☐
- Ladles molten lead into mold opening ☐
- Removes assembly after lead solidifies ☐
- Cuts excess lead from assembly and smooths rough edges ☐
- Alines needle and thread guides, using gages and handtools ☐
- Other (specify) ☐

Replaces, alines, and spaces needles or points in bars:
- Secures bar in jig or vise ☐
- Loosens and removes clamping plate holding needles or points ☐
- Removes and replaces defective needles or points ☐
- Replaces and tightens clamping plate ☐
- Alines and spaces needles and points, using gages and handtools ☐
- Other (specify) ☐

Records:
- Test results ☐
- Production ☐
- Batches of solutions or dyes mixed ☐
- Chemicals used in making solutions and dyes ☐
- Other (specify) ☐

- Pushes trays of garments into autoclave ☐
- Brushes chalk marks from garments ☐
- Fastens end of yarn to empty warp beam ☐
- Mixes chemical solutions or dyes according to formula ☐
- Adds chemicals to obtain specified strength or color ☐
- Counts, folds, and places hose in bag for dyeing ☐
- Classifies hose to be redyed according to size, style, and length ☐
- Fills orders of salesmen and customers for sample hose ☐
- Inserts tissue paper liner in hose ☐
- Pairs hose according to grade, color, size, and length ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Other Supervisors ☐
- Machine Operators ☐
- Machine Helpers ☐
- Workers ☐
- Quality Control Personnel ☐
- Inspection Personnel ☐
- Maintenance Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical School ☐
- Vocational School ☐
- Apprenticeship ☐
- On-the-job-training ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate type of machines and equipment, tools, and work aids used.

Type of machines/equipment:
- Automatic ☐
- Continuous operating ☐
- Hand operated ☐
- High speed ☐
- Manually controlled ☐
- Multi-purpose ☐
- Pattern controlled ☐
- Semi-automatic ☐
- Other (specify) ☐

Machines/equipment:
- Autoclave ☐
- Beamer:
  - Cloth beamer ☐
  - Warp beamer ☐
- Bleaching-equipment ☐
- Boarding machine ☐
- Calendering machine ☐
- Clipper machine ☐
- Cloth finishing range ☐
- Conveyor ☐
- Crocheting machine ☐
- Cutting machine:
  - Band cutting machine ☐
  - Bias cutting machine ☐
- Darning machine ☐
- Detacking machine ☐
- Doubling machine ☐
- Dry cleaning machine ☐
- Drying equipment:
  - Loop drier ☐
  - Rotary drier ☐
  - Suction drier ☐
- Dyeing machine:
  - Paddle dyer ☐
  - Rotary dyer ☐
  - Skein yarn dyer ☐
  - Tumbler dyer ☐
- Dye-reeler-machine ☐
- Embossing machine ☐
- Embroidery machine ☐
- Extractor ☐
- Folding machine:
  - Swing folding machine ☐
  - Tubular folding machine ☐
- Hydraulic press ☐
- Kier boiling equipment ☐
- Knitting machine:
  - Circular knitting machine ☐
  - Double-knit knitting machine ☐
  - Flat knitting machine ☐
  - Jacquard knitting machine ☐
  - Link and link knitting machine ☐
  - Warp knitting machine ☐
- Looper machine:
  - Garment looper machine ☐
  - Hosiery looper machine ☐
- Mixing machine ☐
  - Drum mixer ☐
- Napping machine ☐
- Pressing machine:
  - Hydraulic pressing machine ☐
  - Mangle ☐
  - Roller pressing machine ☐
  - Steam presser ☐
- Rinsing machine ☐
- Rolling machine ☐
- Sewing machine ☐
- Shearing machine ☐
- Soaking machine ☐
- Shrinking equipment ☐
- Spot dyeing and winding machine ☐
- Tentering machine ☐
  - Tenter frame ☐
- Trimming machine ☐
- Weight scales:
  - Balance scale ☐
  - Platform scale ☐
- Wool bleaching equipment ☐
- Wool washing machine ☐
- Wool tinting equipment ☐
- Wringing machine ☐
- Winding machine:
  - Bobbin winding machine ☐
  - Rewinding machine ☐
- Other (specify) ☐

Tools:
- Handtools:
  - Bodkins ☐
  - Hooks ☐
  - Knives ☐
  - Needles:
    - Latch needles ☐
    - Latch-up needles ☐
    - Crochet needles ☐
  - Pliers ☐
  - Scissors ☐
  - Screwdrivers ☐
  - Scribers ☐
  - Saws ☐

- Wrenches ☐
- Other (specify) ☐

Power tools:
- Drills ☐
- Grinders ☐
- Soldering irons ☐
- Other (specify) ☐

Work aids:
- Production orders ☐
- Knitting schedules ☐
- Product specifications ☐
- Material specifications ☐
- Pattern diagrams ☐
- Pattern charts ☐
- Forms ☐
- Head blocks ☐
- Folding boards ☐
- Chalk ☐
- Crayons ☐
- Pins ☐
- Tags ☐
- Formulas ☐
- Pencils ☐
- Examining frames ☐
- Laboratory equipment ☐

Measuring instruments:
- Rulers ☐
- Tapes ☐
- Squares ☐
- Hydrometers ☐
- Viscosimeters ☐
- Evenness tester ☐
- Break tester ☐
- Twist counter machine ☐
- Space gages ☐
- Micrometers ☐
- Feeler gages ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate type of knit and knitted materials or goods produced.

Type of knit:
- Circular knit ☐
- Double knit ☐
- Elastic knit ☐
- Single knit ☐
- Stretch knit ☐
- Warp knit ☐
- Other (specify) ☐

Knitted materials:
- Cloth ☐
  - Jersey cloth ☐

Fabrics:
- Girdle blank fabric ☐
- Pile fabric ☐
- Tricot fabric ☐
- Lace ☐
- Netting ☐
- Other (specify) ☐

Knit goods:
- Bags ☐

Bagging:
- Meat bagging ☐
- Stockinette ☐
- Curtains ☐
- Dishcloths ☐
- Shoe linings ☐
- Towels ☐
- Washcloths ☐

Wearing apparel:
- Boys' wearing apparel ☐
- Children's wearing apparel ☐
- Girls' wearing apparel ☐
- Infants' wearing apparel ☐
- Men's wearing apparel ☐
- Misses' wearing apparel ☐
- Women's wearing apparel ☐
- Other (specify) ☐

Legwear knits:
- Full fashion ☐
- Full length ☐
- Knee length ☐
- Seamless ☐
- Other (specify) ☐

- Anklets ☐
- Hose ☐
  - Panty hose ☐
- Hosiery ☐
- Socks ☐
- Stockings ☐
  - Stocking slippers ☐
- Tights ☐
- Leotards ☐
- Other (specify) ☐

Outerwear knits:
- Bathing suits ☐

PRODUCTS—Continued

- Bathrobes ☐
- Beachwear ☐
- Bedjackets ☐
- Blouses ☐
- Body stockings ☐
- Collar sets ☐
- Cuff sets ☐
- Dresses ☐
- Gloves ☐
- Hats ☐
- Headwear ☐
- Housecoats ☐
- Jerseys ☐
- Mittens ☐
- Mufflers ☐
- Necktics ☐
- Scarfs ☐
- Shawls ☐
- Shirts ☐
- Shouldcrettes ☐
- Skirts ☐
- Slacks ☐
- Suits ☐
  - Pants suits ☐
- Sweaters ☐
  - Sweater sets ☐
- Wristlets ☐
- Other (specify) ☐

Underwear:

- Drawers ☐
- Foundation garments ☐
  - Girdles ☐
- Panties ☐
- Slips ☐
- Step-ins ☐
- Shorts ☐
  - Jockey shorts ☐
- Undershirts ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

LIBRARY WORK

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with:
- Operations of a:
  - Public Library system ☐
  - Branch library ☐
  - Educational institution library or library system ☐
  - Library department ☐
  - Special library ☐
- Providing patrons with library services ☐
- Selecting materials for library collections ☐
- Acquisition of selected materials ☐
- Cataloging and classifying acquisitions ☐
- Designing and implementing library programs and special services ☐
- Supervising, training, and guiding of library personnel ☐
- Recruiting, selecting, hiring, and placement of personnel for library ☐
- Analyzing library or system operations and administrative policy and procedures ☐
- Public and community relations ☐
- Preparing and formating data for computer input ☐
- Day to day library operations ☐
- Other (specify) ☐

Prepares, justifies, and submits budget for library or library system ☐
Participates in library building and program planning activities ☐
Forecasts anticipated needs for expansion of library programs and services ☐
Controls budgetary expenditures within allotment ☐
Addresses meetings of library, civic, community, or educational organizations ☐
Formulates and enforces personnel policy ☐
Interprets established library policy to educational or library personnel ☐
Trains library personnel in performing assigned duties ☐
Gives directions to library personnel regarding technical aspects of duties ☐
Insures that work performed is carried out according to directions ☐
Other (specify) ☐

Administrators:
- Library policy and procedures established by trustees or governing board ☐
- Special projects and experiments in new techniques of providing library services ☐
- Services provided by library or library system ☐
- Established program of providing library services ☐
- Library personnel services in accordance with prescribed regulations ☐
- Other (specify) ☐

Plans, develops, and organizes or arranges:
- Special library projects involving promotion of library and outreach services ☐
- Special library programs and services for handicapped or disadvantaged ☐
- Public and community relations programs ☐

- Technical processes relating to acquisition of materials for library ☐
- Layout of physical facilities for library materials and special services ☐
- Systems and procedures for recording, housing, and maintaining library materials ☐
- Library collections according to subject matter or field of interest ☐
- Library displays or exhibits for stimulating interest of patrons ☐
- Recruiting programs and placement of professional library staff ☐
- Input data for implementing automated library programs or systems ☐
- Other (specify) ☐

Consults or confers with:

- Trustees, governing board, and civic groups on methods for improving:
  - Library administration ☐
  - Library organizations ☐
  - Services for patrons ☐
- Faculty, educational department heads on present and future needs within specified subject area ☐
- School administrative personnel to coordinate cooperation between school and library ☐
- Teachers, parents, and civic groups concerning special programs and activities of library ☐
- Administrative library personnel to devise methods for increasing effectiveness and efficiency of library services ☐
- Coordinators for schools and libraries to devise most effective methods of serving students ☐
- Library department heads and staff concerning acquisitions of materials ☐
- Administrative library personnel to give information on availability of financial grants ☐
- Other (specify) ☐

Analyzes:

- Budgetary requests and cost estimates for materials and personnel ☐
- Administrative policies, procedures, and regulations ☐
- Proposed building, expansion, and extension plans of library or system ☐
- Recommendations submitted by library or other professional personnel ☐
- Lists of materials selected for acquisition ☐
- Proposed and planned programs for completeness and conformance with policy and procedures ☐
- Data on reading habits to determine specific needs of library patrons ☐
- Other (specify) ☐

Advises:

- Librarians on material selection for particular needs or uses ☐
- Personnel planning on technical problems and program content ☐
- Library patrons on services provided by library staff ☐
- Branch and central library personnel of school activities having effect on library services ☐
- Administrative personnel on eligibility requirements for obtaining financial grants ☐
- Other (specify) ☐

Compiles:

- Statistics on acquisition of library materials ☐
- Statistical data, population and community growth rates ☐
- Bibliographies and writings for publication ☐
- Lists of library materials for specific purposes or according to field of interest ☐
- Catalog cards for identification of materials and intergration in library catalog ☐
- Information required for preparation of catalog cards ☐
- Accession lists and records ☐
- Directories of information on medical:
  - Hospitals and facilities ☐
  - Teaching institutions ☐
  - Licensing requirements ☐
- Annotations ☐
- Data on department activities and expenditures ☐
- Other (specify) ☐

Reads or reviews:

- New publications to recommend selection of materials ☐

- Books, articles, and journals concerning new developments and methods used in education ☐
- Issues of periodicals for making decisions regarding retention or disposal ☐
- Lost material data to determine need of replacement ☐
- Materials for purposes of cataloging and classifying ☐
- Other (specify) ☐

Conducts:

- Orientation classes in use of library resources and materials ☐
- Staff meeting on activities of library and commenting on proposals ☐
- Surveys of private or other collections for possible library acquisition ☐
- Classes on tours of library to acquaint students with library facilities and services ☐
- Searches of subject matter material for faculty personnel ☐
- Interlibrary loan transactions ☐
- Other (specify) ☐

Instructs individuals or readers in:

- Use of card catalog and reference files ☐
- Compilation and use of bibliographies ☐
- Research methodology ☐
- Use of reference materials ☐
- Operation and maintenance of machines and other equipment ☐
- Use of special equipment designed for blind or handicapped ☐
- Library policies and procedures ☐
- Other (specify) ☐

Prepares:

- Budgetary requests for library department or branch ☐
- Brief summaries on materials for use in cataloging and classifying ☐
- Reports on library activities and special services provided ☐
- Reference and bibliographic lists for use by professional or staff personnel ☐
- Special services programs for presentation ☐
- Evaluations of library or library system from collected data ☐
- Abstracts from library materials ☐

Replies to:

- Mail requests for information or assistance ☐
- Complaints of patrons concerning library services ☐
- Selection lists of materials to be acquired ☐
- Reports of field investigations, personal contacts, and monies collected ☐
- Patient medical records and case histories ☐
- Other (specify) ☐

Recommends:

- Specific publications or materials for acquisition ☐
- Acquisition of private collections from individuals or organizations ☐
- Reclassification of library jobs based on task evaluation ☐
- Methods of improving organization and administration of library o. library system ☐
- Actions to be taken for obtaining eligibility for financial grants or assistance ☐
- Methods and procedures for improving effectiveness of library ☐
- Promotions of library personnel ☐
- Disposition of materials to department heads ☐
- Methods of enlarging book collections ☐
- Other (specify) ☐

Provides:

- Patrons with reader advisory services ☐
- Patrons with reference services ☐
- Inmates, patients, or staff of institutions with library services ☐
- Handicapped patrons with reading aids and equipment, or special type of library materials ☐
- Library department heads with guidance and supervision ☐
- Patrons with information on library activities, policies, rules, and services ☐
- Doctors with specified medical bibliographies ☐
- Community or civic groups with special program presentations ☐
- Other (specify) ☐

Selects:

- Subject matter materials in cooperation with faculty ☐
- Vendors providing materials considering such factors as discount allowances and delivery dates ☐

- Materials for library or special library collections ☐
- Classification numbers to be assigned new materials ☐
- Materials to be repaired, replaced, or discarded according to condition and value ☐
- Other (specify) ☐

Evaluates:

- Materials for technical, informational, or esthetic qualities ☐
- Special equipment according to intended use, quality, and price ☐
- Materials in specific collections for need of updating or revising ☐
- Performance of library personnel ☐
- Educational background and experience of applicants ☐
- Other (specify) ☐

- Supervises and coordinates activities of workers in department ☐
- Assigns workers to specific duties ☐
- Gives work directions to technical or clerical personnel ☐
- Insures that work meets quality and standards of library ☐
- Writes book reviews on materials and new acquisitions ☐
- Compares list of selected materials with catalog for avoiding duplications ☐
- Circulates list of selected materials for comment by staff ☐
- Trains library personnel in use of specialized equipment ☐
- Translates foreign language material ☐
- Appraises rare books or private collections ☐

Types:

- Orders for materials and supplies ☐
- Catalog cards, shelf lists, and other library materials ☐
- Medical case histories and patient records from data supplied by doctors ☐

Copies.

- Classification numbers on books ☐
- Classification numbers onto shelf cards ☐
- Receives material and compares them with order lists ☐
- Replaces books and other library materials on shelves or in files ☐
- Charges out loan materials to borrowers and records lending data ☐
- Issues library, identification, or other cards to borrowers ☐
- Collects fines and overdue materials from borrowers ☐
- Receives and records payment of fines and for lost materials ☐
- Keeps serial and periodical check-in files ☐
- Prepares bills and notices for overdue materials ☐

Files:

- Catalog cards ☐
- Material orders and removes orders from files when materials are received ☐
- Stamps or marks library materials with ownership identification ☐
- Inventories materials for determining replacement requirements ☐
- Trucks returned books to stacks for shelving ☐
- Monitors library exits for insuring borrowed materials have been charged out ☐
- Traces patrons having library materials ☐
- Drives bookmobile to specified locations ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Board of Trustees ☐
- Board of Directors ☐
- Governing Body ☐
- Institution Administrators ☐
- Library Director ☐
- Other Librarians ☐
- Government Personnel ☐
- Community Groups ☐
- Civic Groups ☐
- Students ☐
- Patients ☐
- Inmates ☐
- Patrons ☐
- Blind Persons ☐
- Handicapped Persons ☐
- Faculty ☐
- Library Employees ☐
- Doctors ☐

- Business People ☐
- Medical Personnel ☐
- Business Services Personnel ☐
- Maintenance and Repair Personnel ☐
- Association Personnel ☐
- Contributors ☐
- Collectors ☐
- Children ☐
- By Telephone ☐
- By Correspondence ☐
- By Teletype ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- College ☐
- Technical ☐
- Post Graduate Work ☐
- Doctorate Work ☐
- Other (specify) ☐

DEGREE

Record an "X" to indicate degree.

- AA ☐
- BA ☐
- BS ☐
- MA ☐
- MLS ☐
- MS ☐
- PhD ☐
- DLS ☐
- Other (specify) ☐

DEGREE MAJOR

Record an "X" to indicate degree major.

- Librarianship ☐
- Library Science ☐
- Medical Librarianship ☐
- Information Science ☐
- Librarian Technical Assistant ☐
- Medical Records Librarian ☐
- Medical Records Technician ☐
- Medical Records Transcriber ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

Related Subjects and Courses:

- Reading and Composition ☐
- World Literature ☐
- English Literature ☐
- American Literature ☐
- Introduction to Western Civilization ☐
- Introduction to Sociology ☐
- Public Speaking ☐
- Survey of Art History ☐
- Business Law ☐
- Principles of Economics ☐
- Report Writing ☐
- Oral Communications ☐
- General Psychology ☐
- Principles of Data Processing ☐
- Speech ☐
- Chemistry ☐
- Physics ☐
- Anatomy ☐
- Physiology ☐
- History ☐
- Language:
  - French ☐
  - German ☐
  - Spanish ☐
  - Italian ☐
  - Latin ☐
  - Russian ☐
  - Other (specify) ☐
- Hygiene ☐
- Psychology ☐

- Typing ☐
- Medical Terminology ☐
- Other (specify) ☐

Librarianship:

- Introduction to Librarianship ☐
- Reading Guidance for Young People ☐
- Reading Guidance for Children ☐
- History of Books and Printing ☐
- Reference Sources and Services ☐
- Introductory Cataloging and Classification ☐
- Administration of Libraries ☐
- Cataloging and Classification ☐
- Bibliography of the Humanities ☐
- Bibliography of the Social Sciences ☐
- Book Selection ☐
- The Librarian's Reading ☐
- Intellectual Freedom and Censorship ☐
- Reading Guidance for Adults ☐
- Bibliography of the:
  - Biomedical Sciences ☐
  - Physical Sciences ☐
- Basic Aspects of Law Librarianship ☐
- Government Publications ☐
- Library Guidance for Teachers ☐
- The American Public Library ☐
- College and University Libraries ☐
- The School Library as a Material Center ☐
- Library Services to:
  - Children ☐
  - Young People ☐
- Seminar in School Libraries ☐
- Personnel Administration in Libraries ☐
- The Library in the Changing Social Scene ☐
- Technical Libraries ☐
- Contemporary Library Theory and Practice ☐
- Information Storage and Retrieval ☐
- Data Processing in Library Technical Services ☐
- Automation of Library Processes and Procedures ☐
- Reprography and Graphic Systems ☐
- Directed Research ☐
- History of Libraries ☐
- Advanced Bibliography ☐
- Medical Librarianship ☐
- Special Problems in Technical Services ☐
- Research Methods in Library Sciences ☐
- Selection of Materials ☐
- Children's Books for School Libraries ☐
- Adolescent Books for School Libraries ☐
- Basic References ☐
- Nonbook Materials ☐
- School Library Administration ☐
- Advanced Problems in Technical Services ☐
- Forms and Movements of Publication ☐
- Development of the Book ☐
- The Behavorial Study of Scientific Information Flow ☐
- Foreign National Bibliography ☐
- Science and Technical Literature ☐
- Analysis of Contents ☐
- Introduction to Information Sciences ☐
- Current Developments in Information Sciences ☐
- Seminar in Mechanized Documentation Techniques ☐
- Seminar in Automatic Data Retrieval ☐
- Measures of Retrieval Effectiveness ☐
- Law Librarianship ☐
- Introduction to Information Systems Design ☐
- Library Systems Analysis ☐
- Data Processing for Libraries ☐
- Survey of Library Automation ☐
- The Librarian and the Society ☐
- Book Collection for University Libraries ☐
- School Libraries ☐
- College and University Libraries ☐
- Public Library Collections and Services ☐
- Other (specify) ☐

Library Technical Assistant:

- Library Services ☐
- Library Resources ☐
- Ordering Practices ☐
- Circulation Procedures ☐
- Cataloging Techniques ☐
- Communications Media ☐
- Book Binding and Book Repair ☐
- Other (specify) ☐

Medical Records Technician:

- Medical Records Technology ☐
- Medical Records Directed Practice ☐
- Seminar in Medical Records ☐
- Introduction to Medical Records ☐
- Beginning Medical Records Science ☐
- Medical Records Science ☐
- Department Supervisor ☐
- Other (specify) ☐

ASSOCIATIONS AND ORGANIZATIONS

Record an "X" to indicate affiliation.

- American Association of Law Libraries ☐
- American Library Association:
  - American Association of School Libraries ☐
  - American Association of State Libraries ☐
  - Association of College and Research Libraries ☐
  - Association of Hospital and Institutional Libraries ☐
  - Public Library Association ☐
- American Merchant Marine Library Association ☐
- American Society for Informational Science ☐
- American Theological Library Association ☐
- Association of American Library Schools ☐
- Association of Cooperative Library Organizations ☐
- Association of Jewish Libraries ☐
- Association of Research Libraries ☐
- Bibliographia Society of America ☐
- Catholic Library Association ☐
- Church and Synagogue Library Association ☐
- Educational Film Library Association ☐
- Film Library Information Council ☐
- Medical Library Association ☐
- Music Library Association ☐
- Special Libraries Association ☐
- Theatre Library Association ☐
- Other (specify) ☐

LIBRARIES AND LIBRARY DEPARTMENTS

Record an "X" to indicate type of library or department.

Libraries:

- Federal:
  - Library of Congress ☐
  - National Library of Medicine ☐
    - National Medical Audio-visual Center ☐
  - National Agricultural Library ☐
  - Library of the Department of:
    - Army ☐
    - Navy ☐
    - Airforce ☐
    - Interior ☐
    - Housing and Urban Development ☐
    - Transportation ☐
  - Other (specify) ☐
- State Library ☐
- County:
  - Central Library ☐
  - Branch Library ☐
- City:
  - Central Library ☐
  - Branch Library ☐
  - Municipal Reference Library ☐
- College Library ☐
- University Library ☐
- Hospital Library ☐
- Junior College Library ☐
- Other (specify) ☐

Special Libraries:

- Information Sciences Library ☐
- Institutional Library ☐
- Industrial Library ☐
- Medical Association Library ☐
- Law Library ☐
- Aerospace Library ☐
- Engineering and Science Library ☐
- Library for the Blind ☐
- Library for the Handicapped ☐
- Other (specify) ☐

Library Department:

- Art ☐
- Research ☐
- Architecture and Urban Planning ☐
- Business Administration ☐
- Biomedical ☐
- Chemistry ☐
- Education and Psychology ☐
- Engineering and Mathematical Sciences ☐
- English ☐
- Law ☐
- Map ☐
- Document ☐
- Music ☐
- Oriental ☐
- Physics ☐
- Theater Arts ☐

- Sciences and Technology ☐
- Social Sciences ☐
- Philosophy and Religion ☐
- Biological Sciences ☐
- Education ☐
- Children's ☐
- Young Adults ☐
- Fiction ☐
- Extension ☐
- Humanities ☐
- Foreign Language ☐
- History ☐
- Genealogy ☐
- Literature ☐
- Serials ☐
- Cataloging ☐
- Acquisitions ☐
- Reserve (limited loan) ☐
- Audiovisual ☐
- Bookbinding and Repair ☐
- Circulation ☐
- Reference ☐
- General Reference ☐
- Special Collections ☐
- Technical Services ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

- Machines and equipment: ☐
  - Information retrieval systems:
    - Computer ☐
    - Printer ☐
    - Terminal ☐
    - Viewers ☐
  - MEDLARS (Medical library automatic retrieval system) ☐
  - Microform machines:
    - Readers:
      - Microfilm ☐
      - Microfiche ☐
      - Microcard ☐
    - Printers:
      - Microfilm ☐
      - Microfiche ☐
      - Microcard ☐
  - Projectors:
    - Film strip ☐
    - Motion picture ☐
    - Opaque ☐
    - Slide ☐
    - Videotape ☐
    - Overhead ☐
    - Transparency ☐
  - Audio equipment:
    - Recorders:
      - Tape ☐
      - Cassette ☐
    - Players:
      - Tape ☐
      - Cassette ☐
    - Phonographs:
      - Remote control ☐
      - Speed control ☐
  - Audio duplicating machines:
    - Open reel tape duplicator ☐
    - Cassette duplicator ☐
  - Copying machines ☐
  - Braille:
    - Typers ☐
    - Writers ☐
  - Computerized book circulation systems ☐
  - Call number stamping machines ☐
  - Dictaphones ☐
  - Photostat machines ☐
  - Microfilm camera book charging equipment ☐
  - Adding machines ☐
  - Calculators ☐
  - Addressographs ☐
  - Hectograph machines ☐
  - Mimeograph machines ☐
  - Cash Registers ☐
  - Tape perforator machines ☐
  - Keypunch machines ☐
  - Typewriters:
    - Tape driven ☐
    - Manual ☐
    - Magnetic Tape Selectric ☐
  - Electronic film inspecting equipment ☐
  - Electric rotary card files ☐
  - Illuminated inspection tables ☐
  - Page magnifiers ☐
  - Bookbinding Machines and Equipment:
    - Collators ☐
    - Folding machines ☐
    - Sewing machines ☐
    - Precision drill presses ☐
    - Paper drills ☐
    - Stapling machine ☐
    - Stitching machine ☐
  - Proof press ☐
  - Offset:
    - Plate making equipment ☐
    - Lithographic printing presses ☐

- Poster printing presses ☐
- Automatic pocket pasting machine ☐
- Teletypewriter book exchange network ☐
- Televisions ☐
  - Closed circuit television systems ☐
- Bookmobiles ☐
- Other (specify) ☐

Tools:
- Handtools:
  - Rubber stamps ☐
  - Date stamps ☐
  - Marking pens ☐
  - Scissors ☐
  - Staplers ☐
  - Card sorters ☐
  - Tapewriters ☐
  - Book repair knives ☐
  - Film splicers ☐
  - Other (specify) ☐
- Power tools:
  - Electric pencils ☐
  - Electric staplers ☐
  - Electric pencil sharpeners ☐
  - Electric speedy stitchers ☐
  - Electric erasers ☐
- Other (specify) ☐

Work Aids:
- Accession books ☐
- Adhesives and glues ☐
- Binders:
  - Cassette ☐
  - Lock ☐
  - Magazine ☐
  - Periodical ☐
  - Pamphlet ☐
- Bibliographies and indexes ☐
- Book: ☐
  - Carts ☐
  - Covers ☐
  - Marking boards ☐
  - Marking kits ☐
  - Marking inks ☐
  - Ordering forms ☐
  - Pockets ☐
  - Date slips ☐
- Cards:
  - Application cards ☐
  - Borrower cards ☐
  - Courtesy cards ☐
  - Catalog ☐
  - Date ☐
  - Overdue ☐
  - Reserve ☐
  - Hold ☐
  - Shelf List ☐
- Cataloging and processing kits ☐
- Book jacket covers ☐
- Date slips ☐
- Atlases ☐
- Dictionaries ☐
- Encyclopedias ☐
- Indexing:
  - Guides ☐
  - Slips ☐
- Interlibrary loan request forms ☐
- Ink pads ☐
- Library:
  - Notices ☐
  - Paste ☐
- Mending:
  - Tape ☐
  - Kits ☐
- Projector screens ☐
- Prismglasses ☐
- Published indices ☐
- Publishers:
  - Catalogs ☐
  - Book reviews ☐
- Labels:
  - Self adhesive ☐
  - Call number ☐
  - Classification: ☐
    - Dewey decimal ☐
    - Library of Congress ☐
  - Book sprays ☐
- Library furniture ☐
  - Cabinets ☐
  - Files:
    - Princeton files ☐
    - Catalog files ☐
  - Stack ladders ☐
  - Step stools ☐
  - Wet book hand presses ☐
  - Children's toys and games ☐
- Other (specify) ☐

MATERIALS, PRODUCTS, SUBJECT MATTER, AND SERVICES

Record an "X" to indicate materials, products, subject matter or services specialities.

Material Specialities ☐ Books ☐

- Reference ☐
- Bibliographies ☐
- Fiction ☐
- Technical ☐
- Textbooks ☐
- Research ☐
- Braille ☐

Brochures ☐
Catalogs ☐
Charts ☐
Documents ☐
- Government documents ☐

House organs ☐
Journals ☐
- Trade journals ☐
- Professional journals ☐

Manuals ☐
- Technical ☐
- Instructional ☐
- Repair and maintenance ☐

Maps ☐
Music scores ☐
Newspapers ☐
Pamphlets ☐
Technical publications ☐
Yearbooks ☐
Film strips ☐
Videotapes ☐
Phonograph records ☐
Audiotapes ☐
- Music tapes ☐
- Language tapes ☐
- Teaching tapes ☐
- Lecture tapes ☐

Serials ☐
Continuations ☐
Foreign language publications ☐
Periodicals ☐
Slides ☐
Transparencies ☐
Motion pictures ☐
Pictures ☐
Film loops ☐
Microfilms ☐
Microfiches ☐
Microcards ☐
Cassette tapes ☐
Patents ☐
Literature reprints ☐
Other (specify) ☐

Product Specialities:

Abstracts ☐
Accession records and lists ☐
Annotations ☐
Bibliographies ☐
Catalogs ☐
Displays and exhibits ☐
Translations ☐
Medical records ☐
Book reviews ☐
Reading lists ☐
Publicity releases ☐
Professional publications ☐
Statistical reports ☐
Survey reports ☐
Library material inventories ☐
Catalog cards ☐
Classification cards ☐
Book marks ☐
Order lists ☐
Annual reports ☐
Correspondence ☐
Questionnaires ☐
Budgets ☐
Oral History ☐
Other (specify) ☐

Subject Matter Specialities:

Art ☐
Architecture and Urban Planning ☐
Business ☐
Economics ☐
Biology ☐
Chemistry ☐
Bio-medicine ☐
Medicine ☐
Education ☐
Engineering ☐
Mathematical Sciences ☐
Law ☐
English literature ☐
Maps and charts ☐
Documents ☐
Music ☐
Physics ☐
Theater arts ☐
Sciences and technology ☐
Social sciences ☐
Biological sciences ☐
Education ☐
Children's books ☐
Young adults' books ☐
Fiction books ☐
Foreign language books ☐
History ☐
Genealogy ☐
Serials ☐
Literature ☐
Humanities ☐

- Physical sciences ☐
- Philosophy and religion ☐
- Periodicals ☐
- Serials ☐
- Other (specify) ☐

Services Specialities:

- Readers advisory ☐
- Reference ☐
- Children's ☐
- Young adults ☐
- Community programs ☐
- Student ☐
- Discussion groups ☐
- Creative writing ☐
- Creative media exhibits ☐
- School library surveys ☐
- Library tours ☐
- Orientation classes ☐
- Audiovisual programs ☐
- Children's story hours ☐
- Book talks ☐
- Community surveys ☐
- Film shows ☐
- Book fairs ☐
- Creative dramatics ☐
- Reading programs ☐
- Outreach activity ☐
- Book location ☐
- Bookmobile ☐
- Circulation ☐
- Copying services ☐
- Interlibrary loan services ☐
- Hold services ☐
- Reserve book room ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

LOGGING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with:
- Logging of trees and overall woods operations ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Cruising timber lands, estimating quality and quantity of stands, and developing logging plans ☐
- Clearing brush, piling and burning slash to reduce fire hazards and facilitate logging activity ☐
- Rigging and operating high-lead or other yarding systems ☐
- Felling trees, trimming limbs, and bucking felled trees in specified length logs ☐
- Operating machines and equipment to load logs for transportation to mill ☐
- Unloading and stacking logs, sorting logs into booms, and assembling rafts ☐
- Other (specify) ☐

Studies and reviews:
- Data on topographical characteristics ☐
- Estimates of quantity and quality of trees in stand ☐
- Age and species of trees in stand ☐
- Logging orders ☐
- Site to be logged ☐
- Other (specify) ☐

Plans:
- Manpower requirements for operations ☐
- Work schedules ☐
- Logging operations ☐
- Surveys of timberlands ☐
- Machine and equipment requirements ☐
- Sequence of unloading logs from transportation vehicles ☐
- Other (specify) ☐

Determines:
- Pattern, intensity, and type of survey on timberlands ☐
- Sampling methods to be used in survey ☐
- Organization and complement of cruise party ☐
- Area to be logged ☐
- Best direction for felling trees in order to:
  - Minimize danger of breaks or damage to other trees ☐
  - Facilitate yarding operations ☐
- Logging and yarding system to be used for survey of terrain ☐

Other (specify) ☐

Prepares:
- Work schedules ☐

- Logging schedules ☐
- Estimates, maps, and reports on timberland surveyed ☐
- Reports on logging methods, efficiency of operation, and progress of work ☐
- Schedules for burning brush and slash depending on weather reports and data ☐
- Other (specify) ☐

- Assigns workers to specific duties ☐
- Gives work directions concerning:
  - Rigging of spar tree or portable tower ☐
  - Notching of anchor stumps ☐
  - Placement of guywires and running tackle ☐
  - Dismantling and moving of ground rigging equipment ☐
  - Location of anchor stumps ☐
  - Attaching straps ☐
  - Reeving yarding cables through blocks ☐
  - Trees to be felled or saved ☐
  - Direction and sequence of felling trees ☐
  - Stump heights and by lengths ☐
  - Other (specify) ☐

- Selects:
  - Spar trees for attaching high-lead rigging ☐
  - Anchor stumps for rigging of guy wires ☐
  - Landing area of yarding operations ☐
  - Placement position of yarding and loading machines ☐
  - Vantage point for observing yarding operations ☐
  - Trees to be logged and marks them for cutting ☐
  - Area for burning brush and slash ☐
  - Logs for loading onto trucks to obtain balanced load of specified species and grade ☐
  - Other (specify) ☐

- Operates machines and equipment to:
  - Yard logs to landing area ☐
  - Load logs on trucks or other transporting equipment ☐
  - Unload and stack logs at mill site ☐
  - Transport logs from loading area to mill ☐
- Other (specify) ☐

- Moves levers, controls, and pedals on machines to:
  - Start or stop machine ☐
  - Rotate loader on chassis ☐
  - Raise or lower tongs or grapple ☐
  - Open or close grapple ☐
  - Pull or swing grapple out ☐
  - Speed up or slow down machine operations ☐
  - Hoist, position, and load log on truck ☐
  - Engage or disengage winches ☐
  - Haul logs to landing area ☐
  - Send choker cables back to yarding area ☐
  - Control speed of winch drums ☐
  - Keep mainline taut for raising logs ☐
  - Prevent choker cables from snagging on obstacles ☐
  - Raise or lower hydraulically operated jacks on equipment ☐
  - Raise or lower spar into or from cradle on machine ☐
  - Extend or retract telescoping section of spar ☐
  - Pay out, tighten, or reel in guywires ☐
  - Other (specify) ☐

- Signals worker to:
  - Pull choker free from log ☐
  - Slack or hold lines while equipment is attached ☐
  - Return rigging to choker setting area ☐
  - Hoist rigging to spar tree top ☐
  - Conduct load tests on yarding rigging ☐
  - Position truck trailer for loading operations ☐
  - Relay operating instructions when:
    - Chokers are set and workers are clear of area ☐
    - Logs become snagged during yarding operations ☐
    - Danger to workers is evident ☐
  - Hoist trailer from chassis of logging truck ☐
  - Push logs between frame members of raft ☐
  - Slacken or take up on choker rigging ☐
  - Hoist and position log on bunker of truck ☐

- Attaches:
  - Choker around log to be yarded ☐
  - Pass block to tree and reeves cable through block for hoisting rigging ☐
  - Crane hook to log trailer on chassis of truck ☐
  - High-lead rigging and guywires to spar tree or straps ☐
  - Other (specify) ☐

- Observes:
  - Workers and listens for signals from rigging load worker ☐
  - Worker activities for conformance with established standards for:
    - Quality of work ☐
    - Quantity of work ☐

- Observance of safety rules and practices ☐
- Yarding and log loading operations to insure worker compliance with safety and working practices ☐
- Logging operations to:
  - Ensure worker compliance with contract provisions ☐
  - Prevent loss of lumber from breakage ☐
  - Prevent damage to residual stand of trees ☐
- Other (specify) ☐

Confers with supervisory personnel to:
- Ascertain ground rigging requirements ☐
- Ascertain data regarding area to be logged ☐
- Obtain data on make up of rafts and booms ☐
- Other (specify) ☐

Surveys forest lands and timber stands to:
- Obtain estimate of timber in stands ☐
- Develop topographical maps and charts ☐
- Locate:
  - Reference points ☐
  - Section lines ☐
  - Boundaries ☐
  - Direction and slope of terrain ☐
- Other (specify) ☐

Examines logs to determine their:
- Grade ☐
- Species ☐
- Diameter ☐
- Length ☐
- Other (specify) ☐

Estimates:
- Waste of lumber due to shape of tree or defects ☐
- Marketable lumber content of logs ☐
- Loss of board footage caused by sawing or defects ☐
- Other (specify) ☐

Rig blocks, cable, and tackle on spar tree for yarding purposes ☐
Climbs trees to install rigging ☐
Cuts limbs, knots, and top from trees ☐
Examines tree top for defects and soundness ☐
Measures diameter of tree top ☐
Changes positions of blocks, as required, during yarding operations ☐
Removes rigging from spar tree upon completion of yarding operations ☐
Inspects, maintains, and repairs rigging and tackle ☐
Studies site of stand to be logged and yarded ☐
Relays orders from workers during yarding operations ☐
Connects electrical wiring to sending key and yarder signal system ☐
Pays out electrical line until vantage point of observation is reached ☐
Pushes controls on sending key to relay signals ☐
Sounds emergency signal when accidents occur or unsafe conditions arise ☐
Assembles, computes, and summarizes survey statistical data ☐
Places section marker, cuts blaze in tree, or drives survey stake in ground ☐
Writes field notes and computes plats ☐
Summarizes data for preparation of maps and property description ☐
Cruises over specified area in pre-established pattern ☐
Samples stand of trees according to pre-determined techniques ☐
Writes field notes listing:
- Timber species and size ☐
- Outstanding topographical features ☐
- Existing communication and transportation facilities ☐

Brands logs to indicate cutting origin, species, and intended use ☐
Cuts rings around bole of tree and straight line through bark ☐
Peels tanbark from tree ☐
Stacks tanbark to prevent weathering of tannin in bark ☐
Verifies load manifests to ascertain species of logs ☐
Schedules sorting and rafting of logs ☐
Separates logs according to size and species ☐
Deflects logs into designated bays ☐
Closes bays with chain or cable ☐
Opens bay and moves designated logs into raft section ☐
Drags choker to log being yarded ☐
Passes choker around log and hooks it to bell ☐
Tightens noose and signals worker that choker is set ☐
Unhooks chokers from yarding logs ☐
Pulls end of choker from bell fastener ☐
Pulls choker cable to obtain slack ☐
Clears earth or brush under log to facilitate attaching of choker ☐
Stretches free end of choker cable toward tractor runway ☐

WHAT THE WORKER DOES Continued

- Fastens choker and winch cable together with clevis [ ]
- Saws undercut in hole of tree to fix direction of fall [ ]
- Saws backcut on opposite side of tree to fell tree [ ]
- Inserts and drives wedges in backcut to tip tree in specified direction and prevent binding of saw [ ]
- Measures and marks hole of felled trees for cutting into log lengths [ ]
- Saws felled trees into logs of specified length [ ]
- Places limbs or poles under felled tree to avoid splitting underside [ ]
- Hammers plugs into holes in end of logs [ ]
- Assembles logs into rafts [ ]
- Bores holes in boom sticks and swifters [ ]
- Threads chain or cable through holes to form raft frame [ ]
- Maneuvers logs into position inside frame [ ]
- Binds logs into raft with chains [ ]
- Couples trailer to truck [ ]
- Directs placement of logs on truck bunkers [ ]
- Releases tongs from logs [ ]
- Specifies method of piling brush and slash and number of piles [ ]
- Notifies fire officials of scheduled time and location of burning [ ]
- Patrols area during burning operations [ ]
- Drives and controls operation of motorboat to:
  - Pull and push logs [ ]
  - Gather logs into boom [ ]
  - Close log booms [ ]
  - Sort logs according to species and size [ ]
  - Tow boom to mill [ ]
  - Other (specify) [ ]

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Mill personnel ☐
- Loggers ☐
- Helpers ☐
- Yarding personnel ☐
- Loading personnel ☐
- Survey personnel ☐
- Machine operators ☐
- Truck drivers ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- College ☐
- Vocational School ☐
- Technical School ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop skills for the occupation.

Related Subjects and Courses:

- Practical Arithmetic ☐
- Drafting ☐
- Mechanical Drawing ☐
- Welding ☐
- Use and Care of Handtools ☐
- Use and Care of Instruments ☐
- First Aid ☐
- Fire Prevention and Fighting ☐
- Employment Skills and Benefits ☐
- Human Relations ☐
- Elements of Supervision ☐
- Estimating ☐
- Other (specify) ☐

Logging:

- Forest Orientation:
  - History ☐
  - Cutting, Felling, Thinning, Bucking, and Terminology ☐
  - Insects and Pest Control ☐
  - Selective Logging ☐

- Timber Cruising ☐
- Scaling Logs and Log Market ☐
- Planting, Seeding, and Conservation ☐

Forest Surveying:
- Basic Elements of Forest Surveying ☐
- Photographic Interpretation ☐
- Surveying Tapes and Chains:
  - Taping ☐
  - Metallic Tapes ☐
  - Abney Level ☐
  - Plumb Bob ☐
  - Staff Compass ☐
- Leveling:
  - Levels ☐
  - Leveling Methods ☐

Timber Harvesting:
- Forest Road Engineering ☐
- Harvesting Methods and Planning Procedures ☐

Logging Forestry:
- Forest Safety ☐
- Study of Trees:
  - Conifers, Types and Uses ☐
  - Deciduous, Types and Uses ☐
- Introduction to Logging Handtools ☐
- Woods Terminology ☐
- Falling and Bucking ☐
- Selective Logging ☐
- Logging Construction ☐
- Yarding ☐
- The Landing ☐
- Loading ☐
- Reloading ☐

Forest Engineering:
- Logging Methods ☐
- Selection of Landings and Settings ☐
- Logging Cost Control ☐
- Topography ☐
- Map Reading ☐
- Soils and Compaction ☐
- Use of Engineering Instruments ☐

Rigging:
- Wire Rope Splicing ☐
- Ground Tackle Overhauling ☐
- Standing and Running Rigging Overhaul ☐
- Inspection of Rigging Gear ☐
- Load Testing ☐
- Cable Preserving ☐

Logging Equipment Operation:
- Engine Oil Check ☐
- Cooling System Check ☐
- Air Filter Check ☐
- Battery Check ☐
- Lubrication ☐
- Visual Inspection of Equipment:
  - Loose or Missing Bolts ☐
  - Broken Parts ☐
  - Points of Wear ☐
- Engine Starting Procedures ☐
- Checking Equipment While Operating ☐
- Shut Down Procedures ☐

Logging Equipment Maintenance:
- Study of Lubrication and Its Importance ☐
- Nuts and Bolts ☐
- Cutting Torch ☐
- Trouble Shooting ☐
- Ignition ☐
- Starting Motor ☐
- Generator ☐
- Carburetor and Gas ☐
- Exhaust ☐
- Motor Overhaul ☐
- Transmission ☐
- Rear End Differential ☐
- Frames ☐
- Tires ☐
- Batteries ☐
- Diesel Motors ☐
- Crawlers ☐
- Brakes ☐
- Front Ends ☐
- Lighting System ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Types of machines:
- Console controlled ☐
- Manually operated ☐
- Remote controlled ☐
- Other (specify) ☐

Machines:

Log loading machines:
- Dip-stick boom loader ☐
- Hayrack loader ☐
- Heel-boom-shovel loader ☐
- Grapple-and-power-tong loader ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS—Continued

- Yarding machines:
  - Balloon suspended yarders ☐
  - Mobile tower yarders ☐
  - High-load yarders ☐
  - Skyline yarders ☐
    - Radio-controlled-carriage yarders ☐
  - Tractor yarders ☐
- Other (specify) ☐

- Boomboats ☐
- Log stacking machines ☐
- Log unloading machines ☐
- Logging trucks ☐
- Donkey machines ☐
- Drott slasher machine ☐
- Logma machine ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Adzes ☐
  - Axes ☐
  - Crowbars ☐
  - Hammers ☐
  - Hatchets ☐
  - Marlin spikes ☐
  - Peavies ☐
  - Pikes ☐
  - Pickaroons ☐
  - Canthooks ☐
  - Shovels ☐
  - Wrenches ☐
  - Pickaxes ☐
  - Mauls ☐
  - Sledges ☐
  - Cross-cut saws ☐
  - Branding hammer ☐
  - Cable splicing tools ☐
  - Hand saw ☐
  - Screw drivers ☐
  - Other (specify) ☐
- Power handtools ☐
  - Chain saw ☐
- Other (specify) ☐

Equipment:

- Electric sending key ☐
- Radio transmitter ☐
- Walkie-talkie ☐
- Other (specify) ☐

Work Aids:

- Surveying instruments:
  - Transit ☐
  - Alidade ☐
- Drafting instruments ☐
- Blocks ☐
- Cables ☐
- Guy wires ☐
- Climbing spurs ☐
- Safety belts ☐
- Survey reports ☐
- Logging schedules ☐
- Portable towers ☐
- Mill orders ☐
- Clevises ☐
- Tongs ☐
- Logging reports ☐
- Caulk boots ☐
- Maps ☐
- Charts ☐
- Measuring tapes ☐
- Scales ☐
- Cutting schedules ☐
- Other (specify) ☐

PRODUCTS AND SERVICES

Record an "X" to indicate products or services.

Products:

- Bolts:
  - Handle ☐
  - Heading ☐
  - Shingle ☐
  - Stave ☐
- Burls ☐
- Crotches ☐
- Driving timber ☐
- Excelsior stock ☐
- Last blocks ☐
- Logs:
  - Softwood logs ☐
  - Hardwood logs ☐
  - Veneer logs ☐
  - Peeler logs ☐
- Skidding logs ☐
- Piling ☐
- Poles ☐
- Posts ☐
- Pickets and paling ☐
- Rails ☐
- Stumps ☐
- Ties ☐
- Wheelstock ☐
- Other (specify) ☐

Services:
- Logging ☐
- Pole cutting ☐
- Pulpwood cutting ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personnel Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

PAPER AND PAPERBOARD CONVERTING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with:
- Die cutting paper and paperboard for the trade ☐
- Manufacturing from purchased materials:
  - Paper goods ☐
  - Pulp goods ☐
  - Fiber products ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Setting up, operating, or feeding, processing machines or equipment ☐
- Converting purchased materials into:
  - Die-cut paper products ☐
  - Cardboard ☐
  - Coated, glazed, or other type of surface, processed paper product ☐
  - Envelopes ☐
  - Bags of all types, except textile ☐
  - Pressed and molded pulp goods ☐
  - Sanitary paper products ☐
  - Stationery, tablets, and related items ☐
  - Allied or miscellaneous paper products ☐
  - Paperboard boxes ☐
  - Corrugated and solid fiber boxes ☐
  - Sanitary food containers ☐
  - Fiber cans, drums, tubes, and similiar fiber or paperboard products ☐
- Other (specify) ☐

Plans:
- Manpower requirements ☐
- Work schedules ☐
- Production procedures ☐
- Machine and equipment requirements ☐
- Work training requirements ☐
- Inspection methods and procedures ☐
- Other (specify) ☐

Reads or reviews:
- Product specifications ☐
- Production schedules ☐
- Material specifications ☐
- Laboratory analyses and test reports ☐
- Processing schedules ☐
- Other (specify) ☐

- Prepares work and worker schedules ☐
- Assigns workers to specific duties ☐
- Interprets manufacturing orders, specifications, and technical data for workers ☐
- Inspects products for conformance with specifications ☐
- Gives workers work directions concerning assigned duties ☐
- Advises workers on methods and procedures for solving work problems ☐
- Orders changes in processing or manufacturing procedures ☐
- Enforces worker compliance with established work procedures, regulations, and safety rules ☐
- Requisitions materials, tools, and equipment ☐
- Notifies maintenance personnel of repair and maintenance requirements ☐
- Keeps processing, production, and manufacturing records ☐
- Prepares activity and production reports ☐
- Other (specify) ☐

Coordinates:
- Department activities with activities of other departments ☐
- Worker activities to obtain optimum production ☐
- Other (specify) ☐

Trains workers in:
- Setup of machines and equipment ☐
- Operation of machines ☐
- Controlling equipment ☐
- Performing assigned duties ☐
- Other (specify) ☐

Determines:
- Material requirements ☐
- Processing sequences ☐
- Setup of machines and equipment ☐
- Adjustments required to machines and equipment ☐
- Other (specify) ☐

- Sets up machines or equipment for other workers ☐
- Sets up and operates machines ☐
- Operates machines ☐
- Controls operation of equipment ☐
- Tends pre-setup machines or equipment ☐
- Assists in operation of machines or equipment ☐
- Feeds materials into machines or equipment ☐
- Offbears materials or products from machines or equipment ☐
- Other (specify) ☐

Installs, alines, and secures:
- Guides ☐
- Stops ☐
- Gears ☐
- Plungers ☐
- Rolls ☐
- Sawblades ☐
- Dies ☐
- Cutters ☐
- Perforators ☐
- Printing attachments ☐
- Other (specify) ☐

- Attaches or laps ☐
- End of material onto rewinder ☐

Turns handwheels or moves levers or controls to:
- Set machine stops and guides ☐
- Adjust:
  - Position of forming bar ☐
  - Space between rolls ☐
  - Flow from glue regulator ☐
  - Tension on pressure rolls ☐
  - Tension on material ☐
  - Material feed guides ☐
- Start machine ☐
- Regulate temperature of processing equipment ☐
- Charge material into equipment tanks ☐
- Meter materials into equipment ☐
- Synchronize speed of:
  - Gluing and coating rolls ☐
  - Machine rolls with feed speed of materials ☐
- Machine operation to obtain and insure uniform material:
  - Cutting ☐
  - Slitting ☐
  - Folding ☐
  - Gluing ☐
  - Sealing ☐
- Stop machine ☐
- Other (specify) ☐

Observes or monitors:
- Counters ☐
- Gages ☐
- Operation of machine or equipment ☐
- Other (specify) ☐

- Inspects products for conformance with manufacturing specifications:
  - Examines in-process and final products for defects, such as:
    - Blisters ☐
    - Wrinkles ☐
    - Spots:
      - Glue spots ☐
      - Dirt ☐
    - Cocked edges ☐
    - Imperfect folding or scaling ☐
    - Printing overlaps and clarity ☐
    - Color distortions ☐
  - Measures dimensions ☐
  - Sorts defective products for salvaging ☐
  - Other (specify) ☐
- Tests samples of products for:
  - Burst resistance ☐
  - Crush resistance ☐
  - Tear resistance ☐
  - Conformance with customer specifications ☐
  - Coating weight by:
    - Weighing coated and uncoated material ☐
  - Other (specify) ☐
- Estimates manufacturing costs for production of paper goods ☐
- Records on forms:
  - Inspection findings ☐
  - Test results ☐
  - Maintenance and repair activities ☐
  - Material expenditures ☐
  - Other (specify) ☐
- Repairs and maintains paper working machines and equipment:
  - Observes machine in operation to locate cause of malfunction ☐
  - Disassembles machine ☐
  - Examines parts for broken or excessive worn components ☐
  - Replaces defective parts ☐
  - Reassembles machine ☐
  - Other (specify) ☐
- Operates machine in trial run to verify setup:
  - Makes adjustments to obtain specified operational performance ☐
  - Gives operator of machine operational directions ☐
  - Other (specify) ☐
- Positions materials against stops or guides ☐
- Mixes coatings or adhesives according to formula ☐
- Dumps mixed materials into hopper or tank ☐
- Assembles paper goods products manually ☐
- Constructs steel die rules ☐
- Mounts rubber dies on fiberboard mats ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Superintendent ☐
- Supervisors ☐
- Other Supervisors ☐
- Operators ☐
- Helpers ☐
- Workers ☐
- Quality Control Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- Vocational School ☐
- Technical School ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop worker skills.

Subjects and courses:
- Practical Arithmetic ☐
- Chemistry ☐
- Coated Papers ☐
- Paper-Plastic Combinations ☐
- Converting Operations ☐
- Use and Care of Handtools ☐
- Use and Care of Paper-working Machines ☐
- Machine Operations ☐
- Elements of Supervision ☐
- Human Relations ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machine types:
- Automatic ☐
- Manually controlled ☐
- Multi-purpose ☐
- Semi-automatic ☐
- Other (specify) ☐

Machines:
- Apple-liner machine ☐
- Bag machine:
  - Cellophane bag machine ☐
  - Polyethylene bag machine ☐
  - Waxed bag machine ☐
- Bar-creaser machine ☐
- Bender machine ☐
- Book-jacket-cover machine ☐
- Box lining machine ☐
- Capping machine ☐
- Carton forming machine ☐
- Convolute tube winder machine ☐
- Corner cutting machine:
  - Double-corner-cutting machine ☐
  - Single-corner-cutting machine ☐
- Corrugator machine:
  - Board-lining machine ☐
  - Double-facing-corrugating machine ☐
  - Single-facing-corrugating machine ☐
- Crimping machine ☐
- Curling machine ☐
- Cutting-and-creasing press ☐
- Cutting machine ☐
- Cutoff machine ☐
- Domer machine ☐
- Drill-punch machine ☐
- Embosser machine ☐
- Embossograph ☐
- Envelope machine:
  - Plunger machine ☐
  - Rotary-envelope-machine ☐
  - Side-seaming-folding-machine ☐
  - Web folding machine ☐
- Ending machine:
  - Double-ending machine ☐
  - Single-ending machine ☐
- Extension-edger machine ☐
- Folding machine:
  - Double fold machine ☐
  - Folded towel machine ☐
  - Napkin machine ☐
  - Single fold machine ☐
- Four-corner-stayer machine ☐
- Gluing machine ☐
- Gummed-paper press ☐
- Knotting machine ☐
- Labeling machine ☐
- Lace-paper-press ☐
- Laundry-bag-punch-machine ☐
- Layboy ☐
- Panel machine ☐
- Paper cone machine ☐
- Paper core machine ☐
- Paper cup machine ☐
- Paper reel machine ☐
- Partition machine ☐
- Patch machine ☐
- Punchboard filling machine ☐
- Ribbon banking machine ☐
- Rewinder machine ☐
- Ring making machine ☐
- Roll reclaimer machine ☐
- Ruf spooling machine ☐
- Scoring machine:
  - Double scoring machine ☐
  - Single scoring machine ☐
- Sealing machine ☐
- Shot tube machine ☐
- Slitter-scorer-cutoff machine:
  - Slitter-and-cutter machine ☐
  - Slitter-cutoff machine ☐
- Slitting machine ☐
- Slotter machine ☐
- Spiral-tubewinder machine ☐

- Stitcher machine ☐
- Stringing machine ☐
- String top sealer machine ☐
- Stripping machine ☐
- Tape fastener machine ☐
- Tag machine ☐
- Tightening machine ☐
- Tube machine ☐
- Valving machine ☐
  - Combination valving and sewing machine ☐
- Wrapping machine ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Screwdrivers ☐
  - Wrenches ☐
  - Bars ☐
  - Hammers ☐
  - Pliers ☐
  - Shears ☐
  - Mauls ☐
  - Files ☐
  - Other (specify) ☐
- Power handtools:
  - Impact wrenches ☐
  - Power screwdrivers ☐
  - Other (specify) ☐

Equipment:

- Coating equipment ☐
- Combiner machines:
  - Laminating equipment ☐
  - Pasting equipment ☐
- Driers ☐
- Drying cabinets ☐
- Strap making machines ☐
- Supercalenders ☐
- Waxing equipment ☐
- Weight scales ☐
  - Laboratory scales ☐
- Other (specify) ☐

Work Aids:

- Charts ☐
- Forms:
  - Inspection forms ☐
  - Production forms ☐
  - Test report forms ☐
- Measuring devices:
  - Templates ☐
  - Patterns ☐
  - Tape measures ☐
  - Rules ☐
  - Compasses ☐
  - Calipers ☐
  - Micrometers ☐
    - Automatic micrometers ☐
- Specifications ☐
- Diagrams ☐
- Tables ☐
- Marking devices:
  - Pencils ☐
  - Scribes ☐
- Schedules ☐
- Test equipment:
  - Mullen burst tester ☐
  - Crush tester ☐

PRODUCTS

Record an "X" to indicate type, base material used, and product manufactured.

Type of product:

- Coated ☐
- Corrugated ☐
- Die-cut ☐
- Embossed ☐
- Enameled ☐
- Glazed ☐
- Gummed ☐
- Impregnated ☐
- Laminated ☐
- Molded ☐
- Oiled ☐
- Pasted ☐
- Pressed ☐
- Saturated ☐
- Vulcanized ☐
- Waxed ☐
- Other (specify) ☐

Type of base material:

- Cardboard ☐
- Cellophane ☐
- Chipboard ☐
- Fiber:
  - Fiber and metal edged ☐
  - Fiber and metal ended ☐
- Fiberboard ☐
- Glassine ☐
- Masonite ☐
- Paper:
  - Paper and cloth lines ☐
  - Paper and cloth based ☐

- Paperboard ☐
- Pulp ☐
- Other (specify) ☐

Product:

- Bags:
  - Cement bags ☐
  - Flour bags ☐
  - Frozen food bags ☐
  - Garment bags ☐
  - Garment storage bags ☐
  - Merchandise bags ☐
  - Mothproof bags ☐
  - Produce bags ☐
  - Shipping bags ☐
- Bobbins ☐
- Book paper ☐
- Bottles ☐
  - Bottle tops and caps ☐
- Boxes:
  - Filing boxes ☐
  - Folding boxes ☐
  - Newsboard boxes ☐
  - Paperboard backs for packages ☐
  - Set-up paper board boxes ☐
- Bread wrappers ☐
- Building board ☐
- Building paper ☐
  - Tar paper ☐
- Candelabra tubes ☐
- Cans ☐
- Cards:
  - File cards ☐
  - Index cards ☐
  - Jacquard cards ☐
  - Jewelers' cards ☐
  - Tabulating cards ☐
- Cartons ☐
- Cases ☐
- Cleaning tissues ☐
- Cones ☐
- Confetti ☐
- Condenser paper ☐
- Conduits ☐
- Containers:
  - Liquid food containers ☐
  - Milk containers ☐
- Cores ☐
- Crepe paper ☐
- Crepe paper products ☐
- Cups ☐
  - Drinking cups ☐
- Decorated wallboard ☐
- Desk pads ☐
- Dishes ☐
- Display items ☐
- Doillies ☐
- Drinking straws ☐
- Drums ☐
- Egg cartons ☐
- Egg cases:
  - Fillers ☐
  - Flats ☐
- Envelopes ☐
- Excelsior ☐
- Eyelets ☐
- Fancy paper ☐
- Flypaper ☐
- Foilboard ☐
- Folders:
  - File folders ☐
  - Manila folders ☐
- Foundations and cutouts ☐
- Fuel cell forms ☐
- Gift wrappers ☐
- Hampers ☐
- Handkerchief ☐
- Honeycomb:
  - Cores ☐
  - Boards ☐
- Insulating:
  - Batts ☐
  - Blankets ☐
  - Fills ☐
- Labels (unprinted) ☐
- Letters ☐
- Lining paper ☐
- Litmus paper ☐
- Mailing:
  - Cases ☐
  - Tubes ☐
- Masking tape ☐
- Memorandum books ☐
- Milk filter disks ☐
- Napkins ☐
- Newsboard ☐
- Newsprint:
  - Pads ☐
  - Tablets ☐
- Notebooks ☐
- Pads ☐
- Pails ☐
- Pallets ☐
- Pans and voids ☐
- Paper plates ☐
- Paper wrappers ☐
- Papeteries ☐
- Papier mache:
  - False faces ☐
  - Halloween lanterns ☐

PRODUCTS—Continued

- Masks ☐
- Novelties ☐
- Partitions ☐
- Photograph:
  - Folders ☐
  - Mats ☐
  - Mounts ☐
- Panels and cutouts ☐
- Patterns ☐
- Pipe ☐
- Pipefittings ☐
- Pressure sensitive tape ☐
- Premoistened towelettes ☐
- Punchboards ☐
- Reels ☐
  - Textile reels ☐
- Ribbons ☐
- Ribbon blocks ☐
- Rolls:
  - Adding machine rolls ☐
  - Telegraph tape rolls ☐
  - Teletype paper rolls ☐
- Sacks:
  - Multi-wall sacks ☐
  - Heavy duty shipping sacks ☐
- Sanitary napkins ☐
- Soap impregnated paper ☐
- Sheets ☐
- Spools ☐
- Spoons ☐
- Stencilboard ☐
- Tablets ☐
- Tags ☐
- Tapes ☐
  - Adhesive tapes ☐
- Thermoplastic covered paper ☐
- Toilet paper ☐
- Towels ☐
- Transfer papers:
  - Gold transfer paper ☐
  - Silver transfer paper ☐
- Utensils ☐
- Wallpaper ☐
- Wall tile ☐
- Wash cloths ☐
- Wastebaskets ☐
- Wrapping paper ☐
- Writing paper ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

PETROLEUM AND NATURAL GAS EXPLORATION

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Plans, directs, and coordinates:
- Research activities to develop:
  - Improved methods and instruments for use in petroleum exploration ☐
  - New methods and techniques for improving drilling and production operations ☐
- Engineering studies to determine:
  - Need for new or improved tool design ☐
  - Methods for improving well production ☐
- Geological studies and explorations of earth formations to locate gas or oil deposits ☐
- Geophysical surveys and prospecting operations to locate gas and oil deposits ☐
- Other (specify) ☐

Supervises and coordinates activities of, workers engaged in:
- Setting up and operating instruments and equipment at exploration site ☐
- Computing data on subsurface rock strata from instrument readings ☐
- Obtaining data on competitors oil and gas exploration and development activities ☐
- Mapping exploration and production areas of company ☐
- Conducting research studies ☐
- Building or fabricating new tools, equipment, or instruments ☐
- Other (specify) ☐

Plans:
- Use of directional drilling techniques and tools ☐
- Methods of drilling to:
  - Maintain verticality of bore hole ☐
  - Plug and redrill crooked holes ☐
  - Drill to oil bearing strata not located below drilling rig ☐
- Research programs ☐
- Prospecting activities ☐
- Other (specify) ☐

Determines:
- Area of geophysical prospecting in which to conduct research ☐
- Desirable location for exploratory drilling operations ☐
- Potential productivity of gas or oil in formation ☐
- Mineral content and physical characteristics of samples ☐
- Hydrocarbon content in samples ☐
- Exact time of reception of sound waves ☐
- Elevations of terrain ☐
- Characteristics of terrain ☐
- Other (specify) ☐

Directs:
- Preparation of charts or profiles from compiled data ☐

- Crews in drilling shallow exploratory boreholes ☐
- Collection of cores, cuttings, and fluid samples for analysis ☐
- Laying out, setting up, and connecting of:
  - Recording devices and equipment ☐
  - Cables ☐
  - Electrodes ☐
  - Instrument panels ☐
- Positioning of instruments ☐
- Shooting of explosives in shot hole ☐
- Setting up of telephone or short-wave communications equipments ☐
- Changes in methods and procedures ☐
- Mapping of areas ☐
- Other (specify) ☐

Initiates and directs experiments to:

- Perfect prospecting procedures ☐
- Explore possibility of new theories ☐
- Develop new or improved prospecting instruments ☐
- Other (specify) ☐

Computes or calculates:

- Data on variations in:
  - Gravity pull ☐
  - Resistivity to electrical charges ☐
  - Magnetic attraction of different earth formations ☐
- Differences in readings at base reference points and other locations ☐
- Time intervals of sound waves from data ☐
- Inclination of borehole from data ☐
- Variations in physical forces at various locations ☐
- Other (specify) ☐

Evaluates:

- Observations ☐
- Recordings ☐
- Results of geophysical surveys ☐
- Other (specify) ☐

Interprets:

- Seismograms for isolating individual sound waves ☐
- Findings to evaluate productive potential of formation ☐
- Mud analysis logs for professional personnel ☐
- Data from:
  - Topographical surveys ☐
  - Well logs ☐
  - Geophysical data ☐
  - Subsurface surveys ☐
  - Graphs ☐
- Data to reveal substructures likely to contain petroleum deposits ☐
- Other (specify) ☐

- Records data from observations ☐
- Verifies accuracy of computations ☐
- Cleans cores or breaks off outside surfaces to remove drilling mud ☐
- Examines cores under ultraviolet light for presence of oil ☐
- Heats cores to drive off vapors and measures volume of condensates ☐
- Studies well logs ☐
- Examines aerial photographs ☐
- Estimates oil reserves in proven or prospective fields ☐
- Measures:
  - Resistance of earth formations to electrical charge ☐
  - Sonar, electrical, or radioactive characteristics of boreholes ☐
  - Dimension and direction of borehole ☐
  - Inclination of geological strata ☐
  - Other (specify) ☐

Consults with:

- Management personnel ☐
- Field personnel ☐
- Field laboratory personnel ☐
- Other (specify) ☐

- Drives truck to transport equipment and instruments to work site ☐
- Unloads equipment, instruments, and explosives ☐
- Guides drill pipe, casings, or instruments into hole ☐
- Loads shot hole with explosives ☐
- Tamps charge of explosives in hole, using sand or water ☐
- Moves controls to:
  - Set off explosive charge ☐
  - Send electrical current through electrodes into earth ☐
  - Start recording instruments when they reach bottom of hole ☐
- Other (specify) ☐

Adjusts instruments to:

- Eliminate electrical interference from earth's currents ☐
- Eliminate weather conditions ☐
- Obtain specified operating conditions ☐

- Obtain specified type of recording ☐
- Other (specify) ☐

- Reads dials, gages, and meters ☐
- Records readings ☐
- Develops negatives of photographically recorded sound waves ☐
- Prints:
  - Photographic charts ☐
  - Copies of recorded graphs ☐
  - Other (specify) ☐
- Locates and marks sites for conducting geophysical prospecting activities ☐
- Diagnoses causes of malfunctioning instruments and equipment ☐
- Refers to schematic drawings to locate source of malfunction ☐
- Repairs instruments and equipment ☐
- Corrects readings to:
  - Allow for elevation, latitude, and irregularities of terrain ☐
  - Conform with physical characteristics, as:
    - Weathering of surface strata ☐
    - Surface velocities ☐
    - Earth elevation ☐
  - Other (specify) ☐

- Correlates:
  - Readings taken at various locations ☐
  - Data ☐
  - Other (specify) ☐
- Plots:
  - Gradients ☐
  - Curves ☐
  - Profiles ☐
  - Other (specify) ☐
- Prepares:
  - Charts of time and depth profiles ☐
  - Contour maps from computed data ☐
  - Diagrams ☐
  - Profiles ☐
  - Cross sections ☐
  - Surface and subsurface maps ☐
  - Maps of exploratory and production areas ☐
  - Recommendations ☐
  - Reports ☐
  - Other (specify) ☐
- Analyzes:
  - Seismograph readings ☐
  - Core samples for:
    - Porosity ☐
    - Permability ☐
    - Oil ☐
    - Water saturation ☐
    - Combustible gas content ☐
    - Amount of gas by volume ☐
  - Salinity of drilling mud ☐
  - Fluid in samples for chemical content ☐
  - Other (specify) ☐
- Recommends:
  - Modification of shot depths ☐
  - Location for positioning sound recorder devices ☐
  - Revisement of prospecting procedures ☐
  - Actions on oil and gas leases and contracts ☐
  - Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Superintendent ☐
- Engineering Personnel ☐
- Supervisors ☐
- Drillers ☐
- Party Chief ☐
- Observers ☐
- Computer Personnel ☐
- Surveyors ☐
- Geologists ☐
- Physicists ☐
- Field Laboratory Personnel ☐
- Mechanics ☐
- Helpers ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- College ☐

- Vocational School ☐
- Technical School ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" after subjects and courses that develop skills for the occupation.

- Applied Science ☐
- Cartography ☐
- Care and Use of Tools ☐
- Care and Use of Instruments ☐
- Chemistry:
  - Applied Chemistry ☐
  - Analytical Chemistry ☐
  - Inorganic Chemistry ☐
  - Qualitative Analysis ☐
- Drafting ☐
- Elements of:
  - Electrical Engineering ☐
  - Electronics Engineering ☐
  - Supervision ☐
- Geology-Geophysics:
  - Applied Physics ☐
  - Earth Physics ☐
  - Exploratory Physics ☐
  - Fundamentals of:
    - Mechanics ☐
    - Heat ☐
    - Sound ☐
    - Optics ☐
    - Electricity ☐
    - Magnetism ☐
  - General Geophysics ☐
  - Geomorphology ☐
  - Geotectonics ☐
  - Historical Geology ☐
  - Modern Concepts in Geological Sciences ☐
  - Marine Geology ☐
  - Mineralogy ☐
  - Micropaleontology ☐
  - Optical Mineralogy ☐
  - Paleontology ☐
  - Petrology ☐
  - Physics of Earth's Interior ☐
  - Physical Geology ☐
  - Stratigraphy and Sedimentation ☐
  - Structural Geology ☐
- Introduction to:
  - Engineering Design ☐
  - Engineering Geology ☐
  - Study of Engineering ☐
- Mathematics:
  - Algebra ☐
  - Arithmetic ☐
  - Calculus ☐
  - Mathematical Analysis ☐
  - Mathematics of Physics and Engineering ☐
  - Trigonometry ☐
- Mechanics:
  - Fluid Mechanics ☐
  - Mechanics of Materials ☐
- Petroleum Engineering:
  - Introduction to Petroleum Technology ☐
  - Properties of Reservoir Rocks ☐
  - Fluid Flow Through Porous Rocks:
    - Single Phase Flow ☐
    - Multiphase Flow ☐
  - Properties of Reservoir Fluids ☐
  - Introduction to Reservoir Engineering ☐
  - Reserve Estimations ☐
  - Formation Evaluation ☐
  - Methods of Estimating Reserves:
    - Well Logging ☐
    - Volumetric Material Balance ☐
  - Oil and Gas Land Valuation ☐
  - Engineering Appraisal ☐
  - Drilling Technology and Subsurface Method:
    - Theory and Practice in Drilling Technology ☐
    - Mechanical Properties of Reservoir Rocks ☐
    - Properties of Drilling Fluids ☐
    - Oil Production Technology ☐
  - Subsurface Methods:
    - Analysis and Correlation of ☐
    - Subsurface Data from Cores ☐
    - Electrical Well Logging ☐
    - Directional and Dip Surveys ☐
    - Production Tests ☐
    - Map Construction:
      - Structural Thickness Maps ☐
      - Porosity Maps ☐
      - Productivity of Permability Contour Maps ☐
      - Cross Section Maps ☐
    - Subsurface Methods Practice ☐
  - Drilling Mud Technology:
    - Functions of Drilling Fluids ☐
    - Properties of Drilling Fluids:
      - Physical Properties ☐
      - Chemical Properties ☐
      - Colloidal Properties ☐
    - Chemical Treatment ☐

- Mechanical Effects ☐
- Flow Characteristics ☐
- Test Procedures ☐
- Interpretation ☐

Petroleum Reservoir Engineering:

- Basic Concepts ☐
- Analytical Methods ☐
- Application of Hydrodynamic Theory ☐

Principles of Interpretation of Measurements:

- Electrical Well Logging Methods ☐
- Nonelectrical Well Logging Methods ☐

Advanced Calculation Methods:

- Numerical Analyses ☐
- Statistical Analyses ☐
- Operational Methods ☐

Fluid Flow Through Porous Media:

- Capillary Effects ☐
- Gravity Effects ☐
- Mechanisms of:
  - Miscible Displacement Processes ☐
  - Immiscible Displacement Processes ☐

Surveying ☐

Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:

- Air compressors ☐
- Diesel:
  - Engines ☐
  - Winches ☐
- Metalworking machines:
  - Brakes ☐
  - Drill presses ☐
  - Grinders ☐
  - Lathes ☐
  - Shears ☐
- Mixers ☐
- Portable rotary drilling rig ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Files ☐
  - Knives ☐
  - Screwdrivers ☐
  - Scribers ☐
  - Punches ☐
  - Pliers ☐
  - Shovels ☐
  - Wire strippers ☐
  - Wrenches ☐
  - Tongs ☐
- Power handtools:
  - Pneumatic wrenches ☐
  - Pneumatic drills ☐
  - Electric drills ☐
  - Soldering guns ☐
  - Soldering irons ☐
- Other (specify) ☐

Equipment:

- Amplifiers ☐
- Electrical detonating devices ☐
- Electrical generators ☐
- Electrical prospecting equipment ☐
- Gravity prospecting equipment ☐
- Magnetic prospecting equipment ☐
- Nuclear prospecting equipment ☐
- Short wave radio equipment ☐
- Seismographic prospecting equipment ☐
- Sound detection devices ☐
- Welding apparatus ☐
- Other (specify) ☐

Work Aids:

- Aerial photographs ☐
- Cores ☐
- Drill cuttings ☐
- Drafting instruments ☐
- Drawings ☐
- Engineering orders ☐
- Field data sheets ☐
- Formulas ☐
- Measuring instruments:
  - Barometers ☐
  - Ammeters ☐
  - Gravimeters ☐
  - Magnetometers ☐
  - Pendulum devices ☐
  - Ohmmeters ☐
  - Torsion balances ☐
  - Thermometers ☐
  - Seismograms ☐
  - Oscilloscopes ☐
- Shooting instructions ☐
- Squares ☐
- Tapes ☐
- Manuals ☐
- Survey reports ☐
- Signal generator ☐
- Circuit diagrams ☐
- Conversion tables ☐

PRODUCTS

Record an "X" to indicate products produced.

- Charts ☐
- Diagrams ☐
- Maps:
  - Terrain maps ☐
  - Surface maps ☐
  - Subsurface maps ☐
  - Profile maps ☐
  - Cross section maps ☐
  - Subsurface contour maps ☐
- Survey reports:
  - Geological survey reports ☐
  - Geophysical survey reports ☐
- Seismographic:
  - Prints ☐
  - Strips ☐
- Shooting reports ☐
- Photographic prints ☐
- Scouting reports ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial ☐
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

PETROLEUM AND NATURAL GAS PRODUCTION

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with:
- Drilling exploratory wells to locate gas or oil deposits ☐
- Drilling oil or gas wells in a proven oilfield ☐
- Producing oil and gas from operating wells ☐
- Treating gas or oil to remove impurities and recover by-products ☐
- Providing technical oilfield services to solve drilling or production problems ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Operating:
  - Natural gas treating equipment at oilfield ☐
  - Crude oil treating equipment at oilfield ☐
  - Drilling equipment to drill for gas or oil ☐
  - Digging and pipelaying machines to build oilfield pipelines ☐
- Erecting:
  - Derricks and drilling rigs for drilling operations ☐
  - Oilfield buildings to house machines and machinery ☐
- Installing:
  - Oilfield machinery and equipment ☐
  - Pumps, valves, separators, and meters in oilfield pipeline ☐
- Providing:
  - Gun perforating services ☐
  - Well cleaning services ☐
  - Electrical well logging services ☐
  - Well surveying services ☐
  - Well shooting services ☐
- Pumping, gaging, and storing crude oil ☐
- Sampling and testing natural gas ☐
- Inspecting, testing, rebuilding, and salvaging surplus oilfield tools and equipment ☐
- Other (specify) ☐

Reviews or analyses:
- Job proposals ☐
- Work orders ☐
- Drilling schedules and reports ☐
- Well production reports ☐
- Gas treating plant reports ☐
- Crude oil treating reports ☐
- Work progress reports ☐
- Maintenance and repair requests ☐
- Pumping and gaging reports ☐
- Dispatching reports ☐
- Other (specify) ☐

Plans:
- Production schedules for wells to meet proration quotas ☐
- Treatment plant schedules ☐
- Methods and procedures for solving well production or drilling problems ☐
- Schedules for maintenance and repair work ☐
- Manpower and man-hour requirements for specific jobs ☐
- Material, tool, machine, and equipment needs ☐
- Installation of buildings, machinery, and equipment at well site ☐
- Methods and procedures for servicing wells or drill holes ☐
- Methods and procedures for increasing well production ☐
- Other (specify) ☐

Confers with:
- Supervisory personnel about:
  - Well repressurizing methods and procedures ☐
  - Changes in pumping methods or operations to obtain optimum production ☐
  - Drilling operations ☐
  - Well servicing operations ☐
- Management personnel about:
  - Nature of drilling or production problem ☐
  - Methods and procedures available for solving problem ☐
  - Performance or progress data on jobs and operations ☐
- Oil producing customers concerning:
  - Nature and type of services which can be supplied by company ☐
  - Negotiating contract for services ☐
- Other (specify) ☐

Recommends:
- Revision of current procedures to control costs and increase production efficiency ☐
- Utilization of outside contractors to provide services or perform jobs ☐
- Use of company employees to perform work ☐
- Personnel actions such as promotions, discharges, or disciplinary actions ☐
- Other (specify) ☐

Coordinates:
- Department activities with those of other departments ☐
- Pumping and treating activities with production activities ☐
- Activities of workers and field crews ☐
- Other (specify) ☐

Trains workers in:
- Drilling methods and procedures ☐
- Operation of machinery, machines, and equipment ☐
- Tasks of specific job ☐
- Observance of safety practices ☐
- Other (specify) ☐

Assigns workers to specific duties ☐

Gives worker specific work directions concerning assigned duties ☐

Observes workers in performance of duties for compliance with work directions ☐

Interprets technical data for workers ☐

Enforces worker compliance with safety rules, regulations, and practices ☐

Evaluates work performance of workers ☐

Requisitions materials, tools, equipment, and machinery ☐

Other (specify) ☐

Prepares:
- Drilling schedules and reports ☐
- Manpower allocations for specific jobs ☐
- Cost estimates for job or work proposals ☐
- Well production schedules and reports ☐
- Oil and gas treatment schedules and reports ☐
- Pumping and gaging reports ☐
- Repair and maintenance reports ☐
- Other (specify) ☐

Erects:
- Drilling derricks and rigs ☐
- Buildings and racks at well site ☐
- Oil holding tanks in oilfield ☐
- Other (specify) ☐

Hoists and positions structural members and secures them in place ☐

Attaches crown block to structural members ☐

Installs hoisting engines and other machinery ☐

Reeves cable through blocks ☐

Levels and alines machinery and engines ☐

Installs ladders, fittings, valves, and other appurtenances ☐

Other (specify) ☐

Sets up and operates drilling rigs ☐

Operates machines or machinery ☐

- Controls operation of processing or treating equipment ☐
- Tends machines or equipment ☐
- Drives and controls operations of machines and special mobile equipment ☐
- Assists in operation of machines, machinery or equipment ☐
- Other (specify) ☐

Moves levers, throttles, or controls to:
- Regulate stroke of beam on cable drilling rig ☐
- Regulate speed of rotation of rotary table turning tools in borehole ☐
- Start or stop operation of machines or equipment ☐
- Adjust operation of machines or equipment to obtain specified performance ☐
- Lower or raise:
  - Tools into or from borehole ☐
  - End of pipe string into or from borehole ☐
  - Casings into or from well ☐
  - Instruments into and from well ☐
  - Explosive charges or perforating equipment into holes ☐
- Detonate or ignite charge in well or borehole ☐
- Other (specify) ☐

Sets controls for specified:
- Pressure ☐
- Flow rates ☐
- Temperature ☐
- Vacuum ☐
- Speed of rotation ☐
- Other (specify) ☐

Selects and attaches to cable or drill string:
- Drilling bits ☐
- Cleaning out tools ☐
- Fishing tools ☐
- Recording instruments ☐
- Explosive charges ☐
- Perforating tools ☐
- Other (specify) ☐

Examines:
- Drill cuttings for effectiveness of drilling bit ☐
- Cores or cuttings to ascertain nature of strata at bottom of borehole ☐
- Operation of slush pumps to insure prescribed circulation and consistency of drilling mud ☐
- Pipelines, flanges, and valves for leaks ☐
- Other (specify) ☐

Observes:
- Gages, instruments, or recorders to ascertain:
  - Depth of borehole ☐
  - Pressure at bottom of well ☐
  - Presence of gas or oil in mud ☐
  - Pressure of tools on bottom of well ☐
  - Other (specify) ☐

- Tightens or loosens threaded joints of pipe sections ☐
- Assembles and disassembles casings ☐
- Places curved metal wedges around pipe string to hold string in place ☐
- Guides sections of pipe sections into or from well ☐
- Mixes or blends:
  - Well acids for acidizing wells ☐
  - Drilling mud to cool bit ☐
  - Chemicals for injection into well ☐
  - Cement for concreting casings ☐
  - Other (specify) ☐

- Gages amount of oil in tanks, using calibrated tape ☐
- Charges:
  - Gun perforators with explosive charges ☐
  - Carriers with specified chemicals ☐
  - Torpedos, dynamite, or nitro into borehole ☐
  - Other (specify) ☐

Tests:
- Natural gas for:
  - BTU values ☐
  - Flame candlepower ☐
  - Specific gravity ☐
  - Proportion of various elements ☐
- Cores for presence and type of oil bearing strata ☐
- Oil or gas to insure removal of impurities ☐
- Steel tubing, casings, and drill pipe for internal flaws ☐
- Other (specify) ☐

- Unloads materials, supplies, and tools at well site ☐
- Digs ditches for laying of pipe ☐
- Grades ground for erection of buildings, rigs, or tanks ☐
- Analyzes samples of fluids in well ☐
- Charts pressure of fluid which reveals strata formation ☐
- Keeps records of:
  - Footage drilled ☐
  - Materials used ☐
  - Location and nature of strata at each depth ☐

WHAT THE WORKER DOES—Continued

- Well production ☐
- Processing operations ☐
- Gaging of tanks ☐
- Pumping operations ☐
- Other (specify) ☐

Repairs or overhauls machines or equipment:

- Disassembles malfunctioning unit ☐
- Cleans and inspects parts ☐
- Measures parts for dimensional specifications ☐
- Repairs or replaces defective part ☐
- Assembles parts ☐
- Sets specified clearances between moving parts ☐
- Tests unit for specified operational performance ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Superintendent ☐
- Supervisors ☐
- Drillers ☐
- Operators ☐
- Helpers ☐
- Field Crew ☐
- Laboratory Personnel ☐
- Service Company Personnel ☐
- Pipeline Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- Vocational School ☐
- Apprenticeship ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop skills for the occupation.

Related Subjects and Courses:

- Practical Arithmetic ☐
- Mathematics ☐
- Applied Science ☐
- Applied Physics ☐
- Production Analysis ☐
- Slide Rule ☐
- Mechanical Drawing ☐
- Map Drawing ☐
- Blueprint Reading ☐
- Use and Care of Tools ☐
- Use and Care of Instruments ☐
- Physical Properties of Metals and Alloys ☐
- Heat Treating ☐
- Destructive and Non-destructive Testing ☐
- Human Relations ☐
- Organization and Supervision ☐
- Other (specify) ☐

Petroleum Technology:

- Identification and Classification of Minerals and Rocks from Well Cuttings ☐
- Field Mapping ☐
- Subsurface Mapping ☐
- Well Correlations ☐
- Historical Geology ☐
- Geophysical Methods ☐
- Electric Log Interpretation ☐
- Rotary Drilling ☐
- Drilling Equipment ☐
- Drilling Mud ☐
- Prime Movers ☐
- Circulating Systems ☐
- Derricks and Masts ☐
- Drilling Mud Make-up Control ☐

Capacity and Design of:

- Derricks ☐
- Masts ☐
- Trusses ☐

Elements of Surveying for Use in:

- Location of Boundaries ☐
- Location of Wells ☐
- Building Well Foundations ☐
- Mapping of Directionally Drilled Wells ☐

- Casing Program Design ☐
- Effect of Additives and Contaminates on:
  - Setting Time of Cement Slurries ☐
  - Ultimate Strength of Cement Slurries ☐
- Volumetric and Pressure Problems in:
  - Hydrafacing Wells ☐
  - Acidizing Wells ☐
- Measurement in Reservoir of:
  - Porosity ☐
  - Permability ☐
  - Saturation ☐
- Single Phase Flow Rates ☐
- Effects of Phase Mixtures ☐
- Effects of Chokes on Flow Rates in Tubing ☐
- Orifice and Positive Displacement Meters ☐
- Oilfield Instruments and Controls ☐
- Gravity Determination ☐
- Field Identification of Sucker Rod Problem ☐
- Temperature Correction Factors ☐
- Types of Corrosion and Control Methods ☐
- Directional Drilling ☐
- Casing and Cementing Wells ☐
- Drilling Procedures ☐
- Acidizing Wells ☐
- Hydrafacing Wells ☐
- Shooting Procedures ☐
- Gravel Packing ☐
- Well-Head Connections ☐
- Tubing Well ☐
- Factors of Low-Artificial Flow Methods ☐
- Oil and Gas Separators ☐
- Pumping Wells ☐
- Field Stock Tanks ☐
- Subsurface Repairs ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:
- Compressors:
  - Air compressors ☐
  - Gas compressors ☐
- Centrifuges ☐
- Catheads ☐
- Drilling machinery:
  - Cable drilling ☐
  - Rotary drilling ☐
    - Draw works ☐
- Engines:
  - Diesel powered ☐
  - Electric powered ☐
  - Gasoline powered ☐
  - Steam powered ☐
- Elevators ☐
- Hoists ☐
- Pumps:
  - Acid pumps ☐
  - Centrifugal pumps ☐
  - Cement pumps ☐
  - Injection pumps ☐
  - Mud pumps ☐
  - Positive displacement pumps ☐
  - Turbine pumps ☐
  - Vacuum pumps ☐
- Winches ☐
- Other (specify) ☐

Tools:
- Handtools:
  - Bars ☐
  - Hack saws ☐
  - Hammers ☐
  - Pick axes ☐
  - Pliers ☐
  - Screwdrivers ☐
  - Scrapers ☐
  - Shovels ☐
  - Sledges ☐
  - Punches ☐
  - Scribers ☐
  - Tongs ☐
  - Wire brushes ☐
  - Wrenches ☐
  - Other (specify) ☐
- Pneumatic tools:
  - Wrenches ☐
  - Drills ☐
  - Grease gun ☐
  - Other (specify) ☐
- Oilfield tools:
  - Drilling bits ☐
  - Fishing tools ☐
  - Swabbing tools ☐
  - Cleaning tools ☐
  - Other (specify) ☐

Equipment:
- Absorption equipment ☐
- Condensers ☐
- Steam boilers ☐
- Heaters ☐
- Furnaces ☐

- Scales ☐
- Absorption towers ☐
- Fractionating towers ☐
- Stills ☐
- Cooling towers ☐
- Stripping towers ☐
- Meters:
  - Orifice meters ☐
  - Positive displacement meters ☐
- Separators ☐
- Other (specify) ☐

Work Aids:

- Charts ☐
  - Borehole charts ☐
- Blueprints ☐
- Logs ☐
  - Well logs ☐
- Schedules:
  - Drilling schedules ☐
  - Production schedules ☐
  - Pumping schedules ☐
  - Work schedules ☐
  - Inspection schedules ☐
  - Testing schedules ☐
  - Gaging schedules ☐
  - Water injection schedules ☐
- Reports:
  - Operational reports ☐
  - Drilling progress reports ☐
  - Pumping reports ☐
  - Treating reports ☐
  - Production reports ☐
  - Gaging reports ☐
  - Laboratory reports ☐
  - Status reports ☐
  - Repair and maintenance reports ☐
- Sketches ☐
- Field maps ☐
- Work orders ☐
- Job proposals ☐
- Requisitions ☐
- Instruments:
  - Micrometers ☐
  - Calipers ☐
  - Gage blocks ☐
  - Manometer ☐
  - Calibration ☐
  - Electric well logging ☐
- Rules ☐
- Feeler gages ☐
- Squares ☐
- Plumb line ☐
- Straight edge ☐
- Other (specify) ☐

PRODUCTS AND SERVICES

Record an "X" to indicate products produced or services rendered.

Crude petroleum and natural gas:

- Crude petroleum:
  - Crude oil ☐
  - Shale oil ☐
- Natural gas ☐
- Other (specify) ☐

Natural gas liquids:

- Natural butane ☐
- Casing head butane and propane ☐
- Cycle condensates ☐
- Isobutane ☐
- Natural liquefied petroleum gases ☐
- Natural gasoline ☐
- Natural propane ☐
- Other (specify) ☐

Well drilling contractor services:

- Gas and oil well directional drilling services ☐
- Dryhole drilling services ☐
- Gas and oil well redrilling services ☐
- Gas and oil well spudding in services ☐
- Other (specify) ☐

Gas and oilfield contractor services:

- Well services:
  - Acidizing services ☐
  - Bailing services ☐
  - Cementing well casing services ☐
  - Chemical treating services ☐
  - Cleaning services ☐
- Foundation building services ☐
- Foundation grading services ☐
- Logging services ☐
- Perforating services ☐
- Plugging services ☐
- Pumping services ☐
- Shooting services ☐
- Surveying services ☐
- Swabbing services ☐
- Derrick building services ☐
- Gas compressing services ☐
- Lease tank erecting, cleaning, repairing services ☐
- Mud services for drilling ☐

- Oil sampling services ☐
- Well casings, tubes, and rods:
  - Pulling services ☐
  - Running services ☐
  - Cutting services ☐
  - Rig building, repairing, dismantling services ☐
  - Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

PETROLEUM REFINING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with:
- Processing crude oil at oilfield facility to remove natural gas and impurities ☐
- Petroleum company's marine terminal operations ☐
- Transfer and routing of oil or petroleum products in refinery pipelines ☐
- Processing and handling of asphalt and road oil products ☐
- Straight run distillation of crude oil ☐
- Thermal cracking of crude oil ☐
- Catalytic cracking of crude oil and gas-oil stocks ☐
- Solvent processing of oil and gas-oil stocks ☐
- Alkylation processing of oil and gas-oil stocks ☐
- Processing petroleum tars into coke ☐
- Polymerization of gaseous hydrocarbons ☐
- Reforming of hydrocarbons ☐
- Treating of petroleum products or converting impurities into byproducts ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Extracting natural gas, sediment, and chemicals from crude oil at oilfield ☐
- Loading, unloading, gaging, and testing operations at a marine terminal ☐
- Bulk handling in refinery pipelines of crude oil, in-process materials, and products ☐
- Thermal cracking of crude oil into fractional petroleum distillates ☐
- Catalytic cracking of crude oil into fractional petroleum distillates ☐
- Thermal cracking of heavy oil distillates into gas-oil stocks ☐
- Solvent processing of products to remove impurities ☐
- Hydrogenation of products to remove impurities and recover byproducts ☐
- Catalytic hydrogenation of low octane napthenic stocks ☐
- Catalytic hydrogenation and cracking of gas-oil stocks ☐
- Alkylating low octane stock to produce high octane blending stock ☐
- Blending of additives with products to improve quality and performance ☐
- Coking petroleum tars ☐
- Other (specify) ☐

Confers with management or supervisory personnel concerning availability of materials ☐
Plans manpower and equipment requirements for scheduled production ☐
Prepares work schedules ☐
Assigns workers to specific duties ☐

Gives workers directions concerning assigned duties ☐
Requisitions materials and supplies for specified processing activities ☐
Coordinates processing activities with other activities of refinery ☐
Inspects equipment and machines in operation for functional efficiency ☐
Compares readings of instruments on units with central control room instruments ☐
Enforces established work procedures, company regulations and safety rules ☐

- Trains workers in operation and control of processing equipment and machinery ☐
- Requests repair or maintenance on equipment, machines, and instrumentation ☐
- Evaluates individual workers' performance ☐
- Initiates personnel actions, such as promotion discharge, or disciplinary action ☐
- Prepares activity, production, and processing reports ☐
- Resolves employee grievances or submits them to higher authority ☐
- Other (specify) ☐

Reads or reviews:
- Schedules ☐
- Specifications ☐
- Operating logs ☐
- Laboratory reports ☐
- On-station test results ☐
- Production orders ☐
- On-line computer processing unit print-outs ☐
- Other (specify) ☐

Determines:
- Processing procedures and sequences ☐
- Line-up of system and equipment in processing units ☐
- Operational settings on processing equipment and machines ☐
- Routing of inprocess and finished products ☐
- Adjustments to equipment or processing changes ☐
- Maintenance and repair needs on equipment and machines ☐
- Other (specify) ☐

- Sets up and operates machines ☐
- Controls operation of processing units from remote control central station ☐
- Controls operation of processing unit at unit ☐
- Monitors processing controlled by on-line computer ☐
- Tends machines and equipment ☐
- Assists worker in operating of processing unit ☐
- Other (specify) ☐

Sets controls or automatic control mechanisms for specified:
- Material flow rates ☐
- Processing temperatures ☐
- Pressures ☐
- Vacuums ☐
- Processing cycles ☐
- Timing cycles ☐
- Material levels in units and tanks ☐
- Material volumes ☐
- Amounts of catalysts or additives ☐
- Recirculation of materials ☐
- Other (specify) ☐

Turns handwheels, switches, or opens piping crossconnection valves to:
- Line up equipment for processing operations ☐
- Direct flow of materials in pipelines ☐
- Regulate outside located controls on towers and columns ☐
- Maintain specified levels in units or tanks ☐
- Bleed lines for obtaining samples of materials or clean residue from lines ☐
- Other (specify) ☐

Monitors:
- Processing activities and operating equipment controlled by on-line computer ☐
- Central control room instruments, lights, and alarms ☐
- Instrumentation and controls on equipment ☐
- Operation of towers and columns ☐
- Other (specify) ☐

Analyzes:
- Computer printouts on processing activities ☐
- On-station tests of material samples ☐
- Laboratory reports ☐
- Operating log entries ☐
- Readings on recorders, instruments, and gages ☐
- Other (specify) ☐

Moves controls, timers, or remote control devices to:
- Start and stop operations ☐
- Adjust, control, and maintain within specified limits processing variables ☐
- Change processing procedures or sequences ☐

- Obtain product meeting specifications ☐
- Reroute materials ☐
- Reprocess materials ☐
- Recirculate materials ☐
- Other (specify) ☐

Calculates or computes:
- Amounts of additives required for blending products ☐
- Quantity of materials in ships' tanks, storage tanks, or tankcars ☐
- Volume of products or material pumped through pipelines ☐
- Other (specify) ☐

Conducts laboratory tests on:
- Crude oil for chemical content and presence of foreign matter ☐
- Inprocess materials at various processing stages ☐
- Finished products for conformance with specifications ☐
- Antiknock qualities of grades and blends of gasoline ☐
- Other (specify) ☐

Performs on-station tests on samples for:
- American Petroleum Institute specific gravity reading ☐
- End point ☐
- Boiling point ☐
- Presence of impurities ☐
- Chemical reaction ☐
- Conformance with processing specifications ☐
- Other (specify) ☐

- Obtains samples of materials for testing ☐
- Gages materials in tanks ☐
- Takes temperature of materials in tanks ☐
- Refers to conversion tables or charts for data used in calculations ☐
- Reads instruments, meters, and gages ☐
- Records readings and operating data in logbook ☐
- Weighs materials used as additives or catalysts ☐
- Patrols lines and equipment areas to locate leaks or equipment malfunctions ☐
- Lubricates and oils machines and machinery ☐
- Makes minor repairs on machines or pipeline valves ☐
- Reports malfunctions to supervisory personnel ☐
- O specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Other Supervisors ☐
- Operators ☐
- Helpers ☐
- Laboratory Personnel ☐
- Pipeline Personnel ☐
- Training Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- Vocational School ☐
- Technical School ☐
- On-the-job Training ☐
- Military Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

Related Subjects and Courses:
- Practical Arithmetic ☐
- Applied Science ☐
- Applied Chemistry ☐
- Properties of Materials ☐
- Production Analysis ☐

- Formulas ☐
- Industrial Instrumentation ☐
- Applied Physics ☐
- Other (specify) ☐

Petroleum Processing Unit Operator:
- Practical Distillation:
  - What are Hydrocarbons ☐
  - How Distillation Works ☐
  - Fractionating Equipment ☐
  - Use of Fractionating Equipment ☐
  - Normal Operations ☐
  - Normal Operating Situations ☐
  - Abnormal Operations ☐
  - Abnormal Operating Situations ☐
- Nature of Heat:
  - Heat and Temperature ☐
  - Heat Transfer ☐
  - Fuels and Combustion ☐
- Furnace Operation:
  - The Furnace ☐
  - Combustion and Air Control ☐
  - Startup and Shutdown ☐
  - Furnace Situations ☐
- Mechanics of Fluids:
  - An Introduction to Fluids ☐
  - The Behavior of Gases ☐
  - Statics ☐
  - Fluids in Motion ☐
- Compressors:
  - Introduction to Compression ☐
  - Positive Displacement Compressors ☐
  - Centrifugal Compressors ☐
- Instrumentation for Operators:
  - Measuring Instruments ☐
  - Pressure and Temperature ☐
  - Liquid Level and Flow ☐
  - Analytical Instruments ☐
  - Process Control Instruments ☐
  - Controllers and Control Modes ☐
- Pumps:
  - Centrifugal Pumps ☐
  - Positive Displacement Pumps ☐
- Pump and Compressor Drivers:
  - AC Motor ☐
  - Steam Turbines ☐
  - Combustion Gas Turbines ☐
  - Internal Combustion Engines ☐
  - Couplings, Gear Trains, and V-Belt Drivers ☐
  - Steam Engines and Steam Reciprocating Pumps ☐
- Significance of Process Control Tests ☐
- Cost Reduction for Operators ☐
- Fire Fighting:
  - Fuels and Combustion ☐
  - Water ☐
  - Foams and Extinguishers ☐
  - Tactics and Strategy ☐
- Accident Control Techniques ☐
- Valves ☐
- Cooling Towers ☐
- Chemistry and Petroluem:
  - Atoms and Molecules ☐
  - The Alkane Family ☐
  - Isomerism of Hydrocarbons ☐
  - Alkenes, Alkadienes, Alkyenes ☐
  - Cyclic Hydrocarbons ☐
  - Refining of Petroleum ☐
  - Cracking Catalysts ☐
  - Isomerization-Catalytic Reforming ☐
  - Chemistry of Petroleum Products In Use ☐
  - Petrochemicals ☐
- Instrumental Analysis ☐
- Principles of Polymerization ☐
- Mass Transfer ☐
- Nature of Petroleum ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machines:
- Agitators ☐
- Blowers ☐
- Compressors:
  - Air compressors ☐
  - Gas compressors ☐
- Filter press ☐
  - Vacuum rotary filters ☐
- Mixers:
  - Mixing tanks ☐
  - Blending tanks ☐
- Centrifuges ☐
- Turbines:
  - Steam turbines ☐
  - Gas turbines ☐
- Pumps:
  - Positive displacement ☐
  - Reciprocating ☐
  - Turbine ☐
  - Centrifugal ☐

- Air Ejectors ☐
- Vacuum pumps ☐
- Other (specify) ☐

Tools:
- Wrenches ☐
- Pipe wrenches ☐
- Bars ☐
- Screwdrivers ☐
- Pliers ☐
- Other (specify) ☐

Equipment:
- Absorption equipment ☐
- Accumulators ☐
- Clarifiers ☐
- Concentrators ☐
- Condensors ☐
- Convertors ☐
- Diffusors ☐
- Distilling equipment:
  - Continuous processing stills ☐
  - Semi-continuous processing stills ☐
  - Computer controlled processing stills ☐
  - Coking stills ☐
- Driers ☐
- Evaporators ☐
- Furnaces:
  - Still furnaces ☐
  - Waste gas furnaces ☐
- Heaters ☐
- Heat Exchangers ☐
- Boilers ☐
- Driers ☐
  - Spray Driers ☐
- Stabilizers ☐
- Rechargers ☐
- Retorts ☐
- Reactors ☐
  - Catalytic reactor equipment ☐
- Weighing scales:
  - Platform scales ☐
  - Analytical scales ☐
  - Automatic weighing equipment ☐
- Electronic processing equipment:
  - On-line processing computers ☐
  - Sample analyzers ☐
  - Blending control computers ☐
- Processing towers and columns:
  - Fractionating towers ☐
  - Absorption towers ☐
  - Quenching towers ☐
  - Cooling towers ☐
  - Purification towers ☐
  - Stripping columns ☐
  - Extractor columns ☐
  - Gas scrubbers ☐
  - Oil scrubbers ☐
- Electrostatic precipitators ☐
- Water recycling equipment ☐
- Other (specify) ☐

Work aids:
- Meters:
  - Hydrometers ☐
  - Calorimeters ☐
  - Salinometers ☐
  - Manometers ☐
  - Viscometers ☐
  - Ph Meters ☐
  - Flowmeters ☐
  - Refractometers ☐
  - Titrometers ☐
  - Turbidometer ☐
  - Chromatographs ☐
  - Thermometers ☐
- Manuals:
  - Operating manuals ☐
  - Safety manuals ☐
  - Procedures manuals ☐
  - Processing manuals ☐
- Schedules:
  - Production schedules ☐
  - Operating schedules ☐
  - Loading schedules ☐
  - Receiving schedules ☐
  - Routing schedules ☐
  - Work schedules ☐
- Specifications:
  - Processing specifications ☐
  - Refining specifications ☐
  - Product specifications ☐
- Operating logs ☐
- Laboratory reports ☐
- Formulas:
  - Treating formulas ☐
  - Blending formulas ☐
  - Compounding formulas ☐
- Synton vibrators ☐
- Charts ☐
- Graphs ☐
- Recording indicators ☐
- Automatic alarms ☐
- Panelboard lights ☐
- Test logs ☐
- Engine Knock comparators ☐
- Calculators ☐
- Calibrated measuring tapes ☐
- Laboratory glass equipment ☐
- Conversion tables ☐

- Conversion charts ☐
- Computer printouts ☐
- Training equipment:
  - Processing simulator ☐
  - Pump cutouts ☐
  - Valve cutouts ☐
  - Drawings ☐
  - Air actuated training equipment ☐
  - Other (specify) ☐

PRODUCTS

Record an "X" to indicate product processed.

- Alkylates ☐
- Aromatic chemicals ☐
- Asphalt ☐
- Asphalt materials ☐
- Carbon black ☐
- Liquefied petroleum gas:
  - Propane ☐
  - Butane ☐
- Lubricating greases ☐
- Lubricating oils:
  - Detergent oils ☐
  - Parafin based oils ☐
  - Wax free oils ☐
  - Mineral oils ☐
  - Illuminating oils ☐
- Fuels:
  - Gasoline:
    - High octane gasoline ☐
    - Aviation gasoline ☐
    - Ethyl added gasoline ☐
    - Low lead gasoline ☐
    - Lead free gasoline ☐
  - Jet engine fuels ☐
  - Domestic fuel oils ☐
  - Diesel engine fuel ☐
  - Industrial fuel oil ☐
- Smudging fuels ☐
- Road oils ☐
- Petroleum coke ☐
- Transmission fluids ☐
- Hydrocarbon fluids ☐
- Sulfur ☐
- Solvents ☐
- Petrolatums ☐
- Petrochemical materials ☐
  - Methane:
    - Methyl alcohol ☐
  - Acetylene ☐
  - Ethylene ☐
    - Polyethylene ☐
  - Propylene ☐
  - Butylene:
    - Isobutylene ☐
    - Butadiene ☐
  - Napthalene:
    - Cyclohexane ☐
    - Benzene ☐
    - Benzol ☐
    - Methylcyclohexane ☐
    - Toulene ☐
- Petroleum tars ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐

Recreation	☐	Transportation	☐
Social Service	☐	Utilities	☐
Subsurface and Space	☐	Other (specify)	☐

SAWMILL AND PLANING MILL WORK

Inventory

WHAT THE WORKER DOES

Below are listed activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with operations of a:
- Sawmill ☐
- Planing mill ☐
- Speciality products mill ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Unloading, ponding, and sorting logs according to size and species ☐
- Processing of logs to produce lumber and wood products ☐
- Planing of lumber to produce surfaced and dimensional lumber products ☐
- Sharpening of saws, knives, and cutters used in mill operations ☐
- Processing of logs or lumber into specialty forest products ☐
- Drying of green cut lumber in kilns ☐
- Other (specify) ☐

Reviews or studies:
- Sales orders ☐
- Production reports ☐
- Order status reports ☐
- Pending orders ☐
- Material, tool, and equipment requisitions ☐
- Log and pond storage reports ☐
- Planing mill schedules ☐
- Master control inventory sheet ☐
- Maintenance and repair reports ☐
- Kiln drying schedules ☐
- Other (specify) ☐

Plans or determines:
- Mill schedules ☐
- Production schedules ☐
- Work priority and sequence schedules ☐
- Log species and sizes to be processed ☐
- Manpower requirements ☐
- Machine and equipment utilization ☐
- Manpower utilization ☐
- Machine and equipment requirements ☐
- Maintenance and repair activities ☐
- Other (specify) ☐

Prepares:
- Work schedules ☐
- Work assignments ☐

- Planing schedules ☐
- Stock control sheets ☐
- Physical inventory reports ☐
- Kiln drying reports ☐
- Production status reports ☐
- Repair and maintenance reports ☐
- Revisions of production schedules due to production line breakdowns ☐
- Other (specify) ☐

Coordinates:
- Mill operations with other operations of company ☐
- Flow of materials through production operations ☐
- Worker activities to obtain optimum efficiency ☐
- Other (specify) ☐

- Assigns workers specific duties ☐
- Gives workers directions concerning assigned duties ☐
- Inspects mill machines and equipment for functional efficiency ☐

Enforces worker compliance with:
- Established work procedures ☐
- Company regulations ☐
- Safety rules and practices ☐
- Other (specify) ☐

Trains workers in:
- Setup of machines ☐
- Operation of machines, machinery, and equipment ☐
- Control of equipment ☐
- Assigned duties ☐
- Other (specify) ☐

- Evaluates worker performance ☐
- Initiates and carries out personnel actions ☐
- Other (specify) ☐

- Sets up machines for other workers ☐
- Sets up and operates machines or equipment ☐
- Operates machines ☐
- Controls operation of automatic machines or equipment ☐
- Drives and controls operation of machines ☐

Tends:
- Preset up or automatic machines ☐
- Conveyors, elevators, or tables to handle material ☐
- Feeds materials into machines manually ☐
- Offbears materials from machines or material handling equipment ☐
- Other (specify) ☐

Installs, alines, and secures in position:
- Saws ☐
- Knives ☐
- Cutters ☐
- Pressure rolls ☐
- Guides ☐
- Stops ☐
- Grinders ☐
- Spray guns ☐
- Other (specify) ☐

Presses pushbutton controls on machine console or control panelboard to:
- Activate power supply to machine controls ☐
- Start machine and machine auxiliaries ☐
- Move workpiece into position for machine operations ☐
- Feed workpiece into cutting tools ☐
- Feed cutting tools into workpiece ☐
- Set machine guides, stops, and tools for specified operations ☐
- Adjust position of tools ☐
- Reprocess workpiece not meeting specifications ☐
- Move workpiece away from machine after operations are completed ☐
- Other (specify) ☐

Moves levers or controls or depresses pedals to:

Set:
- Tension rolls ☐
- Pressure rolls ☐
- Specified temperature ☐
- Specified humidity ☐
- Specified circulation of air ☐

Aline workpiece against:
- Feed guides ☐
- Holding fingers ☐
- Measuring marks ☐
- Alining mechanisms ☐

Regulate:
- Speed of tools ☐

Lowering and raising of:
- Guides ☐
- Stops ☐
- Holding devices or clamps ☐
- Elevators ☐
- Stacking tables ☐
- Unstacking tables ☐
- Dogs ☐

Routing of material on material handling system ☐

- Other (specify) ☐

Observes:
- Operations of machines for malfunctions ☐
- Indicating instruments or gages for insuring readings are within operational limitations ☐
- Flow of material on material handling equipment to:
  - Adjust speed to prevent jams or backlogs ☐
  - Detect misalinement of material ☐
  - Detect waste material or foreign matter ☐
- Log, cant, slab, or timber to determine cuts for producing highest grade product ☐
- Level of solutions in spray tanks ☐
- Other (specify) ☐

Inspects or examines:
- Logs or cut lumber for:
  - Knots or knot clusters ☐
  - Pitch lines ☐
  - Disease damage ☐
  - Cracks ☐
  - Mechanical processing flaws ☐
  - Nails or other metal objects ☐
  - Need of reprocessing ☐
  - Determining grade and quality ☐
- Markings on lumber for:
  - Species of wood ☐
  - Grade and quality code ☐
  - Quantity and dimensions ☐
- Cutting tools for:
  - Broken or bent teeth ☐
  - Need of replacement ☐
  - Uniformity of sharpening operations ☐
  - Burrs ☐
  - Need of swaging teeth ☐
  - Need of tensioning ☐
- Other (specify) ☐

Measures:
- Moisture content of lumber in kiln ☐
- Diameter and length of logs for estimating volume of board feet ☐
- Oversize cants to determine length to be sawed off ☐
- Planed dimensional lumber for conformance with specifications ☐
- Other (specify) ☐

Marks:
- Symbols on lumber to indicate:
  - Grade ☐
  - Sorting classification ☐
  - Reprocessing instructions ☐
- Identifying date on top of:
  - Tied bundles of lumber ☐
  - Stacks of lumber ☐
  - Wrapped packages of lumber ☐
- Other (specify) ☐

Signals workers to:
- Start processing operations ☐
- Remove loaded kiln car ☐
- Reset ratchets on log ☐
- Stop machine operations ☐
- Other (specify) ☐

Opens valves to:
- Allow coolant to flow on knives during grinding operations ☐
- Spray preservative or non-staining material on lumber ☐
- Allow flow of water in controlling humidity in kilns ☐
- Other (specify) ☐

Patches finished lumber to improve appearance or quality ☐

Cuts out defective section, using power tools ☐

Prepares patch of size, species, and grain pattern ☐

Glues patch in place ☐

Sands patch ☐

Pulls lumber from material handling equipment ☐

Stacks lumber on carts ☐

Separates stacks with stickers ☐

Ties lumber into bundles of specified number of boards ☐

Converts dimensions of logs to board feet, using conversion chart ☐

Calculates percentage of moisture in lumber ☐

Straightens materials on material handling equipment ☐

Throws salvage or waste lumber into chipper or hog machine conveyor ☐

Files burrs or nicks from knives or cutters ☐

Lubricates machines ☐

Cleans machines and work area ☐

Notifies supervisory personnel of estimated time of withdrawal of lumber from kilns ☐

Tensions band, circular saws, and knives ☐

Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Superintendent ☐
- Supervisors ☐
- Other Supervisors ☐
- Machine Operators ☐
- Machine Helpers ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- College ☐
- Vocational School ☐
- Technical School ☐
- On-the-job Training ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop worker skills.

Subjects and Courses:
- Drawing and Blueprint Interpretation ☐
- Fundamentals of Cabinet Making ☐
- Practical Arithmetic ☐
- Wood Technology:
  - Uses of Wood Species ☐
  - Characteristics of Woods ☐
  - Limitations of Various Woods ☐
  - Grades of Woods ☐
- Woodworking Machines:
  - Operation of Machines ☐
  - Maintenance of Machines ☐
- Use and Care of:
  - Woodworking Handtools ☐
  - Power Tools ☐
- Cutting Tool Grinding and Maintenance ☐
- Wood Seasoning ☐
- Laying Out Techniques ☐
- Use and Care of Measuring Instruments ☐
- Wood Finishing Procedures ☐
- Log Scaling ☐
- Lumber Grading ☐
- Log Handling and Lumber Carrying Vehicles:
  - Maintenance of Vehicles ☐
  - Operation of Vehicles ☐
- Elements of Supervision ☐
- Human Relations ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate type and machines, tools, equipment, and work aids used.

Type of machines:
- Automatic ☐
- Automatic set ☐
- Console controlled ☐
- Manual controlled ☐
- Panel board controlled ☐
- Other (specify) ☐

Machines:
- Bandsaw sharpening machine ☐
- Bandsaw stretching machine ☐
- Barking machine:
  - Drum type barker ☐
  - Hydraulic type barker ☐
  - Lathe type barker ☐
  - Ring type barker ☐
- Chipper machine ☐
- Compressors ☐
- Grinding machines:
  - Circular saw grinder ☐
  - Knife grinder ☐
- Hog machine ☐
- Material handling machines:
  - Conveyors:
    - Bull chain ☐
    - Endless belt ☐
    - Roller:
      - Feed roller ☐

- Offbearing conveyor ☐
- Transfer roller conveyor ☐
- Transfer conveyor system ☐
- Elevators: ☐
  - Chain dog elevators ☐
  - Car lift elevators ☐
  - Fork car lift elevators ☐
  - Table lift elevators ☐
- Fork life trucks ☐
- Hoists ☐
- Lumber carriers ☐
- Lumber bundling machine ☐
- Lumber packaging machine ☐
- Lumber stacking machine ☐
- Lumber strapping machine ☐
- Planing machines ☐
- Rail-transfer kiln car ☐
- Saws:
  - Bandsaws:
    - Multi-bladed gang saw ☐
    - Adjustable multi-bladed bandsaw ☐
    - Horizontal bandsaw ☐
  - Circular saws:
    - Cut-off saw ☐
    - Double-end-trim saw ☐
    - Edger saw ☐
    - Multiple blade circular saw ☐
    - Table saw ☐
    - Trim saw ☐
    - Variable position circular saw ☐
  - Lath sawing machine ☐
- Sacking and weighing machine ☐
- Sanding machine:
  - Belt sanders ☐
  - Double-drum sander ☐
  - Multi-drum sander ☐
  - Pully sander ☐
- Spray machines ☐
- Weighing and sacking machine ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Files ☐
  - Hammers ☐
  - Pickaroons ☐
  - Putty Knives ☐
  - Punches ☐
  - Screwdrivers ☐
  - Shovels ☐
  - Wrenches ☐
- Power handtools:
  - Chainsaws: ☐
  - Hand sanders ☐
  - Routers ☐
  - Hand held circular saws ☐
- Other (specify) ☐

Equipment:

- Driers:
  - Drier ovens ☐
  - Drying kilns ☐
  - Drying drums ☐
- Furnaces ☐
- Metal detection device ☐
- Other (specify) ☐

Work Aids:

- Blueprints ☐
- Drawings ☐
- Formulas ☐
- Laboratory equipment:
  - Centrifuges ☐
  - Driers ☐
  - Grinders ☐
- Manuals ☐
- Measuring devices:
  - Calipers ☐
  - Moisture meters ☐
  - Protractors ☐
  - Rules ☐
  - Scaling stick ☐
  - Scales ☐
- Reports:
  - Daily reports ☐
  - Operating reports ☐
  - Production reports ☐
  - Processing reports ☐
  - Tally tickets ☐
- Schedules:
  - Kiln drying schedules ☐
  - Production schedules ☐
  - Processing schedules ☐
  - Work schedules ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate type of mill and mill product produced.

Type of mill:

- Chipper ☐

- Cooperage stock ☐
- Excelsior ☐

- Lathing ☐
- Planing:
  - Hardwood ☐
  - Softwood ☐
- Sawmill:
  - Custom ☐
  - Hardwood ☐
  - Softwood ☐
  - Special product ☐
- Shingle ☐
- Other (specify) ☐

Products:

- Cants ☐
- Ceiling lumber ☐
- Cooperage stock:
  - Headers ☐
  - Hoops ☐
  - Staves ☐
- Cut stock ☐
- Dimension lumber ☐
- Excelsior ☐
- Flitches ☐
- Fuelwood ☐
- Kiln dried lumber ☐
- Laminated decking ☐
- Lathing ☐
- Railroad ties ☐
- Sawdust ☐
- Shakes ☐
- Shingles ☐
- Siding ☐
- Silo stock ☐
- Slabs ☐
- Stickers ☐
- Surfaced lumber ☐
- Timbers ☐
- Wood bark products ☐
- Wood blanks ☐
- Wood blocks ☐
- Wood turnings ☐
- Wood chips ☐
- Wood vehicle stock ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

SHIP AND BOAT BUILDING AND REPAIRING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity involved in the job being analyzed.

Directs and coordinates activities relating to:
- Laying out, fabricating, and assembling:
  - Fiberglass boats ☐
  - Aluminum boats ☐
  - Wooden boats ☐
- Specific craftwork involved in building or repairing of:
  - Commercial or private ships or boats ☐
  - Naval vessels ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Planning craftwork ☐
- Estimating costs of repairs or building of vessels ☐
- Scheduling of craftwork in shop or aboard vessel ☐
- Shopwork to:
  - Fabricate or manufacture vessels parts ☐
  - Repair or overhaul machines, machinery, or equipment ☐
- Shipboard work to:
  - Assemble or install vessel's structural parts, machines, or equipment ☐
  - Overhaul or repair machines, machinery, equipment, and accessories ☐
- Providing craft services to other crafts for accomplishing work ☐
- Cleaning and painting of vessels structural parts and equipment ☐
- Drydocking vessels and performing work for drydocking of vessels ☐
- Other (specify) ☐

Plans:
- Manpower requirements for accomplishing craftwork ☐
- Worker schedules ☐
- Procedures for performing work ☐
- Services requirements from other crafts ☐
- Shopwork priorities and sequences ☐
- Shipboard craftwork priorities and schedules ☐
- Training activities of shop and shipboard workers ☐
- Quality control and assurance that work meets specifications ☐
- Other (specify) ☐

Reads, reviews, or studies:
- Production schedules ☐
- Material specifications ☐
- Work orders ☐
- Blueprints, diagrams, or sketches ☐
- Product model ☐

- Patterns and templates ☐
- Inspection reports ☐
- Rework orders ☐
- Other (specify) ☐

Determines:
- Layout of work ☐
- Machine operations required for producing product ☐
- Setup of machines or equipment ☐
- Fabricating sequences ☐
- Assembly procedures and sequences ☐
- Installation procedures and sequences ☐
- Repair, rework, or modification requirements ☐
- Types of tests and testing equipment required ☐
- Rigging materials and procedures for moving and placing loads ☐
- Other (specify) ☐

Establishes reference points and lines for use in:
- Laying out and lofting hull structures ☐
- Laying out of patterns and templates on materials ☐
- Positioning vessel over blocks in drydocking operations ☐
- Locating position for installation of structural components, machines, or equipment ☐
- Other (specify) ☐

Sets up machines and equipment for other workers ☐

Sets up and operates machines and equipment ☐

Tends machines or equipment ☐

Feeds materials into machines ☐

Offbears materials from machines ☐

Other (specify) ☐

Installs, alines, and secures:
- Die sets ☐
- Bending rolls ☐
- Forming rolls ☐
- Stops ☐
- Guides ☐
- Holding fixtures and jigs ☐
- Shear blades ☐
- Workpiece in fixture or jig ☐
- Other (specify) ☐

Cleans surfaces, tanks, or parts by:
- Burning with blowtorch ☐
- Using solvents ☐
- Using steam cleaning equipment ☐
- Sandblasting ☐
- Washing, using pressure equipment ☐
- Other (specify) ☐

Paints surfaces of structures or equipment using:
- Handbrushes ☐
- Paint spraying equipment ☐
- Paint rolling equipment ☐
- Other (specify) ☐

Prepares work schedules for workers ☐

Assigns workers specific duties ☐

Gives work directions to workers concerning duties ☐

Interprets work orders, specifications, drawings, and technical data for workers ☐

Trains workers in:
- Craft duties ☐
- Operation of machines, machinery, and equipment ☐
- Use of craft hand and power tools, jigs, and fixtures ☐

Advises workers on methods and procedures for solving work problems ☐

Coordinates craft activities with those of other crafts ☐

Enforces worker compliance with established work procedures, regulations, and safety rules ☐

Evaluates worker performance ☐

Recommends worker promotions, discharges, and disciplinary actions ☐

Requisitions machines, tools, and equipment and services of other crafts ☐

Keeps production and worker records ☐

Prepares and submits progress, activity, and accomplishment reports ☐

Prepares table of offsets for lofting operations ☐

Compares offset table with table listed on blueprint ☐

Measures parts to insure conformance with specifications ☐

Marks material with fabricating data ☐

Cuts materials into specified size ☐

Signals workers to perform specific operations ☐

Gives hand signals for hoisting, moving, and lowering operations ☐

Packs pipe with material to prevent flattening during bending processes ☐

Heats and bends piping ☐

- Bends, hammers, razes, and planishes sheetmetal stock into specified shape ☐
- Tins metal piping to prevent galvanic or electrolytic action and corrosion ☐
- Sights with transit to position vessel over keel and bilge blocks during drydocking ☐
- Takes in or slacks off lines to position vessel during drydocking operations ☐
- Starts or stops pumps to flood, or pump out water from drydock ☐
- Moves cassion into or from mouth of drydock ☐
- Retubes heat transfer or steam generating equipment ☐
- Moves levers or controls to:
  - Start machine fabricating operations ☐
  - Reset guides, stops, or roll clearances ☐
  - Set length of stroke on ram mechanisms ☐
  - Stop machines ☐
  - Start auxiliary machines or equipment ☐
  - Other (specify) ☐

- Lays out:
  - Outlines for constructing patterns, templates, or plugs ☐
  - Fabricating data on material from blueprints ☐
  - Templates or patterns on material ☐
  - Other (specify) ☐

- Builds or constructs:
  - Templates, patterns, or molds ☐
  - Wooden plugs (master patterns) ☐
  - Framework and target for bending, shaping, and joining pipe ☐
  - Holding fixtures or jigs for assembling parts ☐
  - Keel and bilge blocks for drydocking ☐
  - Other (specify) ☐

- Reworks fabricated parts by:
  - Filing ☐
  - Scraping ☐
  - Grinding ☐
  - Chipping ☐
  - Straightening ☐
  - Bending ☐
  - Planing ☐
  - Other (specify) ☐

- Positions parts for assembly in:
  - Holding jig or fixture ☐
  - Specified relationship to each other ☐
  - Specified alinement ☐
  - Other (specify) ☐

- Fastens parts together using:
  - Screws ☐
  - Bolts ☐
  - Rivets ☐
  - Dowels ☐
  - Solder ☐
  - Welds ☐
  - Brazing materials ☐
  - Studs ☐
  - Other (specify) ☐

- Installs:
  - Planking and decking on vessels ☐
  - Insulating materials on vessels' sides below water line ☐
  - Sheetmetal ventilating and air conditioning ducts ☐
  - Piping systems in vessel ☐
  - Glass in skylights, portholes, and other structures ☐
  - Keel and bilge blocks on platform of drydock ☐
  - Structural sheet parts in vessels ☐
  - Main propulsion machinery, boilers, and auxiliary machinery and equipment ☐
  - Electronic systems, equipment, and gear ☐
  - Electrical equipment, conduits, wiring, and controls ☐
  - Wooden paneling, ships' equipage, and other wood products ☐
  - Deck covering materials on weather decks and other ships' spaces ☐
  - Insulating materials on boilers, piping valves, and ducts ☐
  - Shafting, bearing pedestals, and propellers ☐
  - Weapon systems ☐
  - Fire control systems ☐
  - Vessels' rigging and weight handling gear ☐
  - Hardware, trim, and gaskets ☐
  - Clamps, beam clamps, pad eyes, and other rigging materials ☐
  - Metal furniture and fixtures ☐
  - Wood furniture and fixtures ☐
  - Other (specify) ☐

- Erects:
  - Stages and staging for work operations ☐
  - Antennas, masts, and booms ☐
  - Other (specify) ☐

- Operates portable pneumatic tools to:
  - Chip or calk metal plates ☐
  - Grind metal surfaces or edges ☐

- Drill holes ☐
- Rivet structural steel or sheet metal ducts ☐
- Countersink or ream holes ☐
- Other (specify) ☐

Tests:

- Electrical characteristics of wiring circuits, electrical or electronic equipment or systems ☐
- Pressure vessels, piping, ship compartments, and tanks for leaks ☐
- Machines, machinery, and equipment for operational performance ☐
- Other (specify) ☐

- Disassembles and removes machines, machinery, or equipment from vessels ☐
- Disassembles, repairs, and reassembles machines and equipment ☐
- Rebuilds, rebricks, and insulates firesides of steam generating equipment ☐
- Fabricates canvas and other textile covers, awnings, and sails ☐
- Attaches hoisting and pulling gear to lift, move, and position heavy loads ☐
- Shapes, finishes, and installs wooden masts, booms, and spars ☐
- Applies plastics and cloth materials to form fibre glass coverings ☐
- Laminates and bends lumber to form wooden ships parts ☐
- Manufactures rigging materials for moving loads ☐
- Covers insulating materials with canvas, cloth, or other materials ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- General Supervisors ☐
- Supervisors ☐
- Craft Workers ☐
- Other Craft Workers ☐
- Planning Personnel ☐
- Scheduling Personnel ☐
- Estimates ☐
- Apprentices ☐
- Helpers ☐
- Ship's Personnel ☐
- Union Personnel ☐
- Wage and Salary Personnel ☐
- Employment Personnel ☐
- Military Liaison Personnel ☐
- Government Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training required.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical Training ☐
- Vocational Training ☐
- On-the-job Training ☐
- Military Training ☐
- Apprenticeship (see apprenticeship listing) ☐
- Other (specify) ☐

SHIP AND BOAT BUILDING AND REPAIR APPRENTICESHIPS

Record an "X" to indicate type of apprenticeship training.

- Boatbuilder, Wood ☐
- Coppersmith ☐
- Joiner ☐
- Loft Worker ☐
- Pipe Coverer and Insulator ☐
- Shipfitter ☐
- Shipwright ☐
- Sailmaker ☐
- Sheetmetal Worker ☐
- Pipefitter ☐
- Boilermaker ☐
- Marine Machinist ☐

- Shipyard Painter ☐
- Shipyard Rigger ☐
- Fire Control Mechanic ☐
- Machinist (Ships' weapons) ☐
- Electronics Technician ☐
- Welder ☐
- Welder-Fitter ☐
- Shipyard Patternmaker ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

Craft Related Subjects and Courses:
- Shop Mathematics ☐
- Trade Science ☐
- Blueprint Reading ☐
- Applied Science ☐
- Practical Geometry ☐
- Algebra ☐
- Properties of Metals ☐
- Properties of Materials ☐
- Use and Care of Measuring Devices ☐
- Pneumatics ☐
- Hydraulics ☐
- Elements of Basic Metallurgy ☐
- Applied Chemistry ☐
- Elements of Leadership ☐
- Foremanship and Supervision ☐
- Trade Drawing ☐

Other (specify) ☐

Boatbuilder, Wood:
- Introduction to Boatbuilder Trade ☐
- Boat Nomenclature ☐
- Fastening and Unfastening ☐
- Operating Portable Power Tools ☐
- Staging ☐
- Techniques of Machinery Operation ☐
- Methods of Framing ☐
- Drydock Work ☐
- Applying Insulation ☐
- Fabricating Plastics ☐
- Boat Construction ☐
- Other (specify) ☐

Coppersmith:
- Introduction to Coppersmithing ☐
- Ship and Shipyard Nomenclature ☐
- Materials ☐
- Fuel Oil Systems ☐
- Lube Oil Systems ☐
- Location of Machinery ☐
- Fabrication ☐
- Salt Water Systems ☐
- Potable Water Systems ☐
- Steam Systems ☐
- Retubing ☐
- Testing ☐
- Distilling Plants ☐
- Compressed Air and Gas Systems ☐
- Hydraulic Oil Systems ☐
- Radar Wave Guides ☐
- Gasoline Systems ☐
- Bending and Targeting ☐
- Ship Construction ☐
- Other (specify) ☐

Joiner:
- Introduction to Joiner Trade ☐
- Fastening and Unfastening ☐
- Operation of Machinery ☐
- Various Types of Staging ☐
- Applying Insulation ☐
- Techniques of Operating Machinery ☐
- Techniques of Installing Decking ☐
- Installing Covers ☐
- Elements of Drydock Work ☐
- Methods of Framing ☐
- Ship Construction ☐
- Other (specify) ☐

Loft Worker:
- Laying Out and Lofting Hull Structures ☐
- Laying Out and Lofting Hull Fixtures ☐
- Establishing Ships' Lines ☐
- Developing Templates ☐
- Fabricating Templates ☐
- Developing Offsets ☐
- Operating Machinery ☐
- Other (specify) ☐

Patternmaker, Wood:
- Foundry Processes ☐
- Molds ☐
- Patternmaking Handtools ☐
- Woodworking Machines ☐
- Structural Methods ☐
- Pattern Construction Techniques ☐
- Pattern Equipment ☐
- Making Simple Parted Pattern ☐
- Cores and Core Boxes ☐
- Cylindrical Patterns and Core Boxes ☐

- Flanged Fitting Patterns ☐
- Segmental Staved Patterns ☐
- Match Boards ☐
- Pattern and Casting Design ☐
- Patternmaker and the Foundry ☐
- Advanced Pattern Layout ☐
- Metal Patterns ☐
- Valve Patterns ☐
- Propeller and Impeller Patterns ☐
- Involute Pump Casing Patterns ☐
- Double Suction Impeller Patterns ☐
- Complex Cores and Core Boxes ☐
- Plexiglass Models ☐
- Plaques and Insignias ☐
- Other (specify) ☐

Pipe Coverer and Insulator:

- Introduction to the Trade ☐
- Nomenclature of Ships ☐
- Shop Practices ☐
- Low Temperature Pipe Coverings ☐
- High Temperature Pipe Coverings ☐
- Ventilation System Insulation ☐
- The Steam Cycle ☐
- Main and Auxiliary Machinery ☐
- Machinery Insulation ☐
- Refrigeration Piping Systems ☐
- Refrigeration Insulation ☐
- Main and Auxiliary Machinery Insulation ☐
- Portable Insulation ☐
- Air Conditioning Piping Insulation ☐
- Refrigeration Piping Insulation ☐
- Other (specify) ☐

Shipfitter:

- Introduction to Shipfitting ☐
- Ship Compartmentation ☐
- Quality Assurance ☐
- Machine Operations ☐
- Layout Practices ☐
- Shop Assembly Practices ☐
- Structural Ship Repair ☐
- Ship Installation Practices ☐
- Types and Uses of Machines ☐
- Welding Theory ☐
- Welding Specifications ☐
- Pneumatic Tools Operations ☐
- Riveting Specifications ☐
- Computing Bond Allowances ☐
- Parallel Line Development ☐
- Assembly Procedures for Welding ☐
- Methods of Installing Structural Parts ☐
- Hole Cutting Specifications ☐
- Air and Hydrostatic Testing ☐
- Radial Line Development ☐
- Installing Structural Assemblies ☐
- Triangulation ☐
- Establishing Working Lines ☐
- Dies, Molds, and Fixtures ☐
- Using Table of Offsets ☐
- Templating from Ship ☐
- Other (specify) ☐

Sheetmetal Worker:

- Machine Operation ☐
- Ventilation Fabrication ☐
- Furniture Fabrication ☐
- Galley Equipment Fabrication ☐
- Shipboard Outfitting and Fixture Installation ☐
- Sketching ☐
- Programming ☐
- Materials of Sheetmetal Industry ☐
- Theory of Surface Development ☐
- Tool Practices ☐
- Bench Layout ☐
- Other (specify) ☐

Pipefitter Ship:

- Introduction to Pipefitting ☐
- Ship and Shipyard Nomenclature ☐
- Materials ☐
- Fuel Oil Systems ☐
- Lube Oil Systems ☐
- Location of Machinery ☐
- Salt Water Systems ☐
- Sanitary Systems ☐
- Steam Systems ☐
- Retubing ☐
- Chemical Cleaning ☐
- Distilling Plants ☐
- Compressed Air and Gas Systems ☐
- Hydraulic Oil Systems ☐
- Radar Wave Guides ☐
- Aircraft Fuel Systems ☐
- Bending and Targeting ☐
- Pipes and Fittings ☐
- Pipefitting Practices ☐
- Plumbing and Pipefitting Tools ☐
- Insulation Piping ☐
- High Pressure Pipe Fitting ☐
- Sanitary Plumbing Systems ☐
- Pipe Work ☐
- Sizing Pipe for Plumbing ☐
- Hot Water Supply ☐
- Heating Boilers ☐
- Steam Heating Systems ☐
- Other (specify) ☐

Machinist, Outside:
- Main Propulsion Machinery ☐
- Engineering Auxiliaries ☐
- Underwater Machinery ☐
- Automatic Controls ☐
- Diesel Engines ☐
- Hydraulics ☐
- Aircraft Launching Systems ☐
- Aircraft Recovery Systems ☐
- Other (specify) ☐

Shipyard Painter:
- Introduction to Painting ☐
- Surface Preparation ☐
- Introduction to Spray Painting ☐
- Techniques of Spray Painting ☐
- Brush Painting ☐
- Silk Screening ☐
- Lettering ☐
- Graining ☐
- Paint Mixing ☐
- Paint Matching ☐
- Varnishing and Lacquering ☐
- Touch-up Painting ☐
- Painting Boats ☐
- Deck Covering ☐
- Equipment Painting ☐
- Other (specify) ☐

Machinist (Ships' Weapons):
- Hydraulic Systems ☐
- Main Battery Systems ☐
- 5" Gun Mounts ☐
- 3" Gun Mounts ☐
- Missile Launchers ☐
- Gun Directors ☐
- Principles of Naval Ordnance ☐
- Shop Practices ☐
- Torpedo Tubes ☐
- Underwater Sound Systems ☐
- Other (specify) ☐

Fire Control Mechanic:
- Introduction to Fire Control Mechanics ☐
- Ships' Nomenclature ☐
- Cabling ☐
- Layout and Installation ☐
- Fundamentals of Electricity ☐
- Power Distribution ☐
- Test Equipment Applications ☐
- Fire Control Radar Units ☐
- Troubleshooting Radar Units ☐
- Synchro and Servo Fundamentals ☐
- Fire Control Surface Problems ☐
- Fire Control Air Problems ☐
- Computing Basic Mechanisms ☐
- Radar Fundamentals ☐
- Linear Rate Gun Fire Control Systems ☐
- Radar Transmitters and Timing ☐
- Radar Indicators ☐
- Automatic Tracking Controls ☐
- Other (specify) ☐

Shipyard Electrician:
- Lighting ☐
- Interior Communications ☐
- Power ☐
- Electronic Systems ☐
- Weapon Systems ☐
- Switchboards and Controllers ☐
- Motors and Generators ☐
- Electrical Equipment Systems ☐
- Electrical Test Equipment ☐
- Degaussing Systems ☐
- Indicators ☐
- Other (specify) ☐

Electronics Mechanic:
- Equipment Restoration ☐
- Sonar Restoration ☐
- Communications ☐
- Radar Indicators ☐
- IFF Equipment ☐
- Electronic Countermeasures ☐
- Electronic Test Equipment ☐
- Sonar Systems ☐
- Radar Systems ☐
- Electronics Mechanic (Radar Option) ☐
- Radar Power Supply ☐
- Indicators (RHI) ☐
- Radar Transmitters ☐
- Radar Antennas and Transmission Line ☐
- Servo Mechanisms ☐

Electronics Mechanic (Sonar Option):
- Transducers ☐
- Fathometers ☐
- Scanning Switches ☐
- Preamplifiers and Receivers ☐
- Sonar Indicators ☐
- Sonar Trainers ☐

Electronics Mechanic (Communications Option):
- Communication Receivers ☐
- Receiver Converter Equipment ☐
- Communications Transmitters ☐
- Antenna Tuners, Couplers, Multicouplers ☐
- Shipboard Communication System ☐
- Other (specify) ☐

- Boilermaker:
  - Safety and Shipyard Orientation ☐
  - Steam, Its History and Advancement ☐
  - The Steam Cycle ☐
  - Hand and Power Tools ☐
  - Boiler ☐
    - Types ☐
    - Arrangement ☐
    - Utilization ☐
    - Pressures ☐
    - Inspection ☐
    - Wear ☐
    - Defects ☐
    - Repai ☐
  - Refitting ☐
  - Bricklaying ☐
  - Basic Layout ☐
  - Tube Installation ☐
  - Tube Removal ☐
  - Tube Layout ☐
  - Tube Bending ☐
  - Machine Operations ☐
  - Machine Operation Calculations ☐
  - Tanks ☐
  - Head forming ☐
  - Calculating Volume ☐
  - Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

- Machines and Equipment:
  - Metalworking:
    - Bending machines:
      - Bending rolls ☐
      - Flanging rolls ☐
      - Crimping rolls ☐
      - Brakes ☐
      - Pipe bending machines ☐
      - Tube bending machines ☐
    - Presses:
      - Punch presses ☐
      - Dishing machines ☐
      - Hydraulic presses ☐
      - Bulldozers ☐
      - Drill presses ☐
    - Bending machines ☐
    - Pedestal grinders ☐
    - Shearing machines ☐
    - Cutoff saws ☐
      - Abrasive saws ☐
    - Welding machines:
      - Spotwelders ☐
      - Resistance welders ☐
      - Automatic welding machines ☐
    - Flame cutting machines ☐
      - Pantograph flame cutters ☐
    - Other (specify) ☐
  - Woodworking:
    - Wood lathes ☐
    - Bending machines ☐
    - Planers ☐
    - Shapes ☐
    - Mortisers ☐
    - Saws:
      - Circular saws ☐
      - Bandsaws ☐
      - Jigsaws ☐
      - Sabre saws ☐
      - Variety saws ☐
      - Gangsaws ☐
    - Jointers ☐
    - Patternmaking ☐
    - Laminating presses ☐
    - Boring machines ☐
    - Drill presses ☐
    - Steam chambers ☐
    - Other (specify) ☐
  - Lofting machines:
    - 1/10 Optical detailing machines ☐
    - Other (specify) ☐
  - Electrical:
    - Coil winders ☐
    - Battery chargers ☐
    - Other (specify) ☐
- Tools:
  - Handtools:
    - Adzes ☐
    - Augers ☐
    - Axes ☐
    - Bars:
      - Crowbars ☐
      - Prybars ☐
    - Chisels:
      - Metal chisels ☐
      - Wood chisels ☐
    - Drills:
      - Brace and bits ☐
      - High speed twist drills ☐

- Files:
  - Metal files ☐
  - Wood files ☐
- Screwdrivers ☐
  - Phillips screwdrivers ☐
- Wrenches:
  - Allen wrenches ☐
  - Box wrenches ☐
  - Crescent wrenches ☐
  - Monkey wrenches ☐
  - Open end wrenches ☐
  - Socket wrenches ☐
  - Stilson wrenches ☐
- Cutters:
  - Glass cutters ☐
  - Scissors ☐
  - Sidecutters ☐
  - Wire cutters ☐
  - Wire strippers ☐
  - Pipe cutters ☐
  - Pipe threaders ☐
  - Taps ☐
  - Reamers ☐
- Pullers:
  - Bearing pullers ☐
  - Gear pullers ☐
- Hammers:
  - Ballpeen hammers ☐
  - Claw hammers ☐
- Saws:
  - Hacksaws ☐
  - Keyhole saws ☐
  - Ripsaws ☐
  - Crosscut saws ☐
- Mauls:
  - Copper mauls ☐
  - Rubber mauls ☐
- Knives:
  - Drawknives ☐
  - Linoleum knives ☐
- Pliers:
  - Vise grip ☐
  - Channel lock ☐
- Heaters:
  - Blowtorches ☐
  - Hawk torches ☐
  - Rivet heaters ☐
- Stud drivers ☐
- Easy outs ☐
- Woodcarving tools ☐
- Scribers ☐
- Pipe benders ☐
- Tube benders ☐
- Marlin spikes ☐
- Tongs ☐
- Belting tools ☐
- Flaring tools ☐
- Rivet bucking tools ☐
- Nail punches ☐
- Paint brushes ☐
- Paint rollers ☐
- Gravers ☐
- Wood planes ☐
- Sledges ☐
- Mallets ☐
- Scrapers ☐
- Other (specify) ☐

- Power handtools:
  - Buffers ☐
  - Calking hammers ☐
  - Chipping hammers ☐
  - Grinders ☐
  - Drills ☐
  - Riveting guns ☐
  - Soldering guns ☐
  - Impact wrenches ☐
  - Stapling guns ☐
  - Hand held circular saws ☐
  - Blind rivet drivers ☐
  - Other (specify) ☐

- Work Aids:
  - Mechanical measuring devices:
    - Calipers ☐
    - Compasses ☐
    - Dividers ☐
    - Protractors ☐
    - Squares ☐
    - Quadrants ☐
    - Gages:
      - Center gage ☐
      - Dial indicator ☐
      - Feeler gage ☐
      - Balance gage ☐
      - Height gage ☐
      - Radius gage ☐
      - Screw pitch gage ☐
      - Thickness gage ☐
      - Thread gage ☐
      - Wire gage ☐
    - Micrometers:
      - Depth micrometer ☐
      - Flange micrometer ☐
      - Inside micrometer ☐
      - Outside micrometer ☐
      - Swiss hole micrometer ☐
      - Torque meter ☐

- Argle plates ☐
- Rules:
  - Depth rule ☐
  - Machinist rules ☐
  - Steel tape rules ☐
  - Other (specify) ☐

- Electrical measuring equipment:
  - Circuit continuity equipment ☐
  - Impedance measuring equipment ☐
  - Ammeters ☐
  - Bridge gages:
    - Kelvin bridge gages ☐
    - Megohm bridge gages ☐
    - Vacuum bridge gages ☐
    - Wheatstone bridge gages ☐
  - Ohmmeter ☐
  - Power factor meter ☐
  - Phase angle meter ☐
  - Voltohm millimeter ☐
  - Microwave test equipment ☐
  - Radiometer ☐
  - Oscillograph ☐
  - Oscilloscope ☐
  - Light meter ☐
  - Other (specify) ☐

- Optical measuring instruments:
  - Microscope ☐
  - Optical comparator ☐
  - Polariscope ☐
  - Shadowgraph ☐
  - Optical centering instruments ☐
  - Optical protractor ☐
  - Transit ☐
  - Bore sighting instruments ☐
  - Other (specify) ☐

- Miscellaneous Work Aids:
  - Patterns ☐
  - Templates ☐
  - Formulas ☐
  - Work orders ☐
  - Models ☐
  - Records ☐
  - Graphs ☐
  - Charts ☐
  - Tables ☐
    - Offset tables ☐
  - Specifications ☐
  - Test sheets ☐
  - Holding devices ☐
  - Jigs ☐
  - Boat plugs ☐
  - Specification manuals ☐
  - Stock lists ☐
  - Sketches ☐
  - Blueprints ☐
  - Abrasive stones ☐
  - Hoists ☐
    - Chain Hoists ☐
  - Block and Tackle ☐
  - Other (specify) ☐

SHIP AND BOAT STRUCTURES, MACHINERY, EQUIPMENT, SYSTEMS, AND SHIPYARD FACILITIES

Record an "X" to indicate structures, machinery, or equipment worked on.

- Vessels:
  - Boats:
    - Pleasure boats ☐
    - Fishing boats ☐
    - Speedboats ☐
  - Ships:
    - Passenger ☐
    - Passenger-Cargo ☐
    - Cargo ☐
    - Tankers ☐
    - Naval ☐
  - Other (specify) ☐

- Ships machinery and equipment:
  - Propulsion machinery:
    - Steam turbines ☐
    - Steam reciprocating engines ☐
    - Diesel engines ☐
    - Gasoline engines ☐
    - Boilers:
      - Fuel oil ☐
      - Nuclear power ☐
    - Reduction gear ☐
  - Engineering auxiliaries:
    - Pumps ☐
    - Evaporators ☐
    - Air compressors ☐
    - Condensers ☐
    - Ice machinery ☐
    - Deck machinery ☐
    - Steering engines ☐
    - Air ejectors ☐
  - Electrical equipment:
    - Turbo generators ☐
    - Diesel generators ☐
    - Gas generators ☐

SHIP AND BOAT STRUCTURES, MACHINERY, EQUIPMENT, SYSTEMS, AND SHIPYARD FACILITIES—Continued

- Switchboards ☐
- Lighting systems ☐
- Intercommunications systems ☐
- Motors ☐
- Gyrocompasses ☐
- Electronic equipment:
  - Radar ☐
  - Sonar ☐
  - Fire Control ☐
  - Weapons control ☐
  - Communications ☐
- Other (specify) ☐

Ships structures:

- Hull ☐
- Decks ☐
- Superstructures ☐
- Living spaces ☐
- Compartments ☐
- Cabins ☐
- Tanks ☐
- Other (specify) ☐

Ships systems:

- Navigational systems ☐
- Ventilating systems ☐
- Air conditioning and refrigeration systems ☐
- Piping systems:
  - Fuel ☐
  - Lubricating oil ☐
  - Fire main ☐
  - Potable water ☐
  - Salt water ☐
  - Gasoline ☐
  - Steam ☐
  - Sanitary ☐
- Electrical wiring systems ☐
- Weapons control systems ☐
- Damage control systems ☐
- Heating systems ☐
- Instrumentation and controls systems ☐
- Other (specify) ☐

Shipyard facilities:

- Drydocks:
  - Graving docks ☐
  - Floating drydocks ☐
  - Marine railways ☐
- Drydock equipment:
  - Blocks:
    - Keel blocks ☐
    - Bilge blocks ☐
  - Cassions ☐
  - Staging ☐
- Cranes ☐
- Craft shops ☐
- Other (specify) ☐

ENVIRONMENT SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

TEXTILE MILL WORK

Inventory

WHAT THE WORKER DOES

Below are listed activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates mill activities concerned with:
- Production of yarn from specific type of fiber ☐
- Production of thread from specific type of fiber ☐
- Weaving broad woven fabrics from processed fibers ☐
- Weaving or braiding narrow fabrics from processed fibers ☐
- Finishing, by textile mill processes, fabrics and cloth:
  - On commission basis ☐
  - Purchased materials ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Sorting and grading raw materials used in products ☐
- Preparing warp and filling yarn ☐
- Winding and twisting yarn ☐
- Spinning yarn ☐
- Spinning thread ☐
- Weaving cloth ☐
- Washing and soaping cloth ☐
- Mixing dyes or paints for dyeing yarns or printing fabrics ☐
- Dyeing yarn or printing woven fabrics ☐
- Aging printed fabrics ☐
- Finishing fabrics ☐
- Grading fabrics according to defects ☐
- Other (specify) ☐

Studies or analyzes:
- Production schedule ☐
- Material specifications ☐
- Processing specifications ☐
- Fabric specifications ☐
- Other (specify) ☐

Determines from data:
- Fiber preparation requirements ☐
- Direction and amount of twist required to produce specified type fibers ☐
- Yarn size, type, texture, and quantity for specified fabric ☐
- Machine setup for specific mill processes ☐
- Pattern chains required ☐
- Yarn or fabric dyeing activities ☐
- Fabric finishing activities ☐
- Processing sequences and requirements ☐
- Manpower requirements ☐
- Other (specify) ☐

- Prepares:
  - Order sheets ☐
  - Warp pattern sheets ☐
  - Formula sheets ☐
  - Loom setup instructions indicating:
    - Harness size ☐
    - Number of harnesses required ☐
    - Type of heddles ☐
    - Warp ends per inch ☐
    - Sequences of drawing through harness and reeds ☐
  - Changes in loom:
    - Shedding ☐
    - Picking ☐
    - Warp letoff ☐
    - Cloth take-up speeds ☐
  - Processing schedules ☐
  - Production reports ☐
  - Work and worker schedules ☐
  - Other (specify) ☐

- Computes:
  - Gear size required to effect required twist on yarn ☐
  - Draft required to reduce roving to specified yarn size ☐
  - Drafting gear size to stretch roving and reduce roving to size ☐
  - Other (specify) ☐

- Assigns workers to specific duties ☐
- Interprets production orders, product specifications, and technical data for workers ☐
- Gives workers directions for performing assigned duties ☐
- Advises workers on methods and procedures for solving work problems ☐
- Reviews laboratory and test results on materials and products ☐
- Orders changes in machine operations or processing methods to meet product specifications, as required ☐
- Coordinates departmental activities with those of other departments ☐
- Requisitions materials and supplies required for production activities ☐
- Trains workers in assigned duties and equipment or machine operations ☐
- Notifies maintenance personnel of needed machine or equipment repairs ☐
- Enforces worker compliance with work procedures, regulations, and safety rules ☐
- Observes workers performing duties to insure their compliance with work directions ☐
- Keeps processing and production records ☐
- Other (specify) ☐

- Sets up machine or range sections for other workers ☐
- Sets up and operates machines or equipment ☐
- Operates machines ☐
- Controls operation of equipment ☐
- Tends:
  - Machines or equipment ☐
  - One section of range ☐
- Feeds materials or inprocess products into machines or equipment ☐
- Offbears materials or products from machines or equipment ☐
- Other (specify) ☐

- Sets up and adjusts textile machines or equipment for specific mill process(es):
  - Reads production orders or set up directions to obtain set up data ☐
  - Determines from data setup procedures or adjustments required ☐
  - Disassembles and removes parts or equipment requiring change, such as:
    - Rollers ☐
    - Pulley ☐
    - Pattern chain ☐
    - Pattern control card ☐
    - Gears ☐
    - Beam ☐
    - Harness assemby ☐
    - Rolls ☐
    - Guides ☐
  - Selects specified replacement parts ☐
  - Installs, alines, and secures parts or equipment on/in machine ☐
  - Turns setscrews or controls to:
    - Set specified clearances between parts ☐
    - Obtain specified tension on materials ☐
    - Obtain specified pressure on materials ☐
    - Synchronize speed of machine or equipment units ☐
    - Regulate speed of rolls or rollers ☐
    - Regulate machine or equipment unit:
      - Pressures ☐
      - Temperatures ☐
      - Vacuum ☐
  - Pulls material through:
    - Drop wires ☐
    - Heddles ☐
    - Reed dents ☐
  - Threads materials through:
    - Guides ☐
    - Rolls ☐

- Rollers ☐
- Tension devices ☐
- Stop motion devices ☐
- Machine or equipment units ☐

Fastens ends of materials or products onto:
- Loom beam ☐
- Bobbin ☐
- Spool ☐
- Rewinding device ☐

Operates machine or equipment to test setup for conformance with operational specifications ☐

Adjusts setscrews, settings, and controls to obtain specified operation ☐

Other (specify) ☐

Turns valves to:
- Fill tanks or vats with specified amounts of liquid ☐
- Admit steam into equipment ☐
- Heat rollers or solutions ☐
- Empty tanks or vats of solutions or dyes ☐
- Pump materials to processing stations ☐
- Other (specify) ☐

Inspects or examines:

Inprocess materials for:
- Slubs ☐
- Holes ☐
- Grease spots ☐
- Breaks ☐
- Tangles ☐

Textile fibers or fabrics for:
- Color runs ☐
- Uneven color shades ☐
- Defects in winding ☐
- Smudges ☐
- Out of register printing ☐
- Other (specify) ☐

Weighs:
- Materials specified on formula for solutions ☐
- Fabric samples ☐
- Fiber samples ☐
- Uncoated and coated products ☐
- Other (specify) ☐

Mixes:
- Chemical processing solutions ☐
- Dyes ☐
- Paints for silk screen or fabric printing operations ☐
- Coating materials for products ☐
- Other (specify) ☐

Measures materials or textile products for conformance with specified:
- Width ☐
- Length ☐
- Thickness ☐
- Other (specify) ☐

Tests:
- Chemical solutions for specified concentration or strength ☐

Materials or products for:
- Type of composition ☐
- Tensile strength ☐
- Shrinkage characteristics ☐
- Absorbency capabilities ☐
- Fastness of dye ☐
- Crease resiliency ☐
- Resistance to fading ☐
- Other (specify) ☐

Counts number of picks per inch ☐

Records test or inspection results ☐

Marks defective materials or products ☐

Adds chemicals to solution to obtain specified strength ☐

Cuts out defective materials ☐

Ties broken ends of fibers or yarn together ☐

Rethreads ends of materials through machines and accessories ☐

Sews trailing and leading edges of cloth together for feeding into range ☐

Cuts material after specified amount has been wound on spooler bobbin ☐

Doffs filled bobbins, spools, cones, or reels ☐

Replaces:
- Filled bobbins, spools, cones, or reels with empty ones ☐
- Exhausted bobbins, spools, cones, or reels with filled ones ☐
- Beams holding yarn with hoist ☐

Pushes racks of materials into equipment for processing ☐

Patrols section of range to observe operations ☐

Notifies supervisory personnel of malfunctioning equipment or defective products ☐

Trucks materials to processing stations ☐

Reworks defective products by:
- Mending ☐
- Weaving ☐
- Other (specify) ☐

Repairs:

Rebuilds:

Replaces:
- Textile mill manufacturing or processing machines or equipment ☐
- Inspects and observes operation of equipment or machine malfunctioning ☐
- Disassembles or removes malfunctioning unit or equipment part ☐
- Examines disassembled parts for:
  - Cracks ☐
  - Excessive wear ☐
  - Alinement of components ☐
  - Cause of malfunction ☐
- Measures parts or spacing of parts for conformance with specifications ☐
- Cleans and polishes metal parts ☐
- Smoothes rough edges ☐
- Replaces or repairs parts ☐
- Installs, alines, levels, and secures parts in place ☐
- Adjusts clearances between parts ☐
- Test operates machine or equipment for conformance with operational specifications ☐

Components of machines, as:
- Half lap needle bars ☐
- Loom reeds ☐
- Shuttles ☐
- Spindles ☐
- Harness frames and straps ☐
- Shuttle boxes and binders ☐
- Reeds ☐

Clothing or lining on machine parts ☐
Pattern chains on looms ☐
Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Supervisors ☐
- Other Supervisors ☐
- Machine Operators ☐
- Range Operators ☐
- Range Tenders ☐
- Workers ☐
- Helpers ☐
- Laboratory Personnel ☐
- Inspection Personnel ☐
- Testing Personnel ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐
- Junior College ☐
- Technical School ☐
- Vocational School ☐
- Apprenticeship ☐
- On-the-job Training ☐
- Other (specify) ☐

MILL MATERIALS AND PROCESSES

Record an "X" to indicate materials and processes used.

Types of raw materials:

Type of fibers:
- Monofilament ☐
- Yarn ☐
- Staple ☐
- Tow ☐
- Other (specify) ☐

Types of organic fibers:
- Alpaca hair ☐
- Angora hair (rabbit or goat) ☐
- Cotton fiber ☐
- Flax fiber ☐
- Hemp fiber ☐
- Jute fiber ☐
- Mohair ☐
- Silk fiber ☐
- Vicuna hair ☐
- Wool (sheep) ☐
- Other (specify) ☐

Types of cellulose man-made fibers:
- Acetate ☐
- Cuprammonium ☐

- Nitrocellulose ☐
- Rayon ☐
- Viscose ☐
- Other (specify) ☐

Types of synthetic organic fibers:

- Acrylic ☐
- Acrylonitrile ☐
- Anidex ☐
- Casein ☐
- Elastometric ☐
- Fluocarbon ☐
- Linear esters ☐
- Modacrylic ☐
- Nylon ☐
- Olefin ☐
- Polyester ☐
- Polyvinyl ester ☐
- Polyvinylidene chloride ☐
- Protein ☐
- Saran ☐
- Vinal ☐
- Vinylidene chlorida ☐
- Zein ☐
- Other (specify) ☐

Types of mill processes:

- Aging ☐
- Balling ☐
- Beaming ☐
- Bleaching ☐
- Blending ☐
- Boiling ☐
- Brushing ☐
- Calendering ☐
- Carbonizing ☐
- Carding ☐
- Coating ☐
- Combing ☐
- Cooling ☐
- Crimping ☐
- Crushing ☐
- Cutting ☐
- Desizing ☐
- Doubling ☐
- Drawing ☐
- Drying ☐
- Dyeing ☐
- Embossing ☐
- Extracting ☐
- Finishing ☐
- Flocking ☐
- Folding ☐
- Garnetting ☐
- Impregnating ☐
- Mangling ☐
- Marking ☐
- Mercerizing ☐
- Napping ☐
- Painting ☐
- Picking ☐
- Pleating ☐
- Polishing ☐
- Pressing ☐
- Quilling ☐
- Reeling ☐
- Rolling ☐
- Roving ☐
- Sanforizing ☐
- Shrinking ☐
- Silk screening ☐
- Singeing ☐
- Sizing ☐
- Skeining ☐
- Slivering ☐
- Slubbing ☐
- Spooling ☐
- Spinning ☐
- Splicing ☐
- Splitting ☐
- Sponging ☐
- Spraying ☐
- Spreading ☐
- Starching ☐
- Steaming ☐
- Stretching ☐
- Tentering ☐
- Texturizing ☐
- Throwing ☐
- Twisting ☐
- Warping ☐
- Washing ☐
- Waterproofing ☐
- Waxing ☐
- Weaving ☐
- Winding ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate type of and machines and equipment, tools and work aids.

Types of machines/equipment:
- Automatic ☐
- Continuous processing ☐
- Manually operated ☐
- Multi-purpose ☐
- Pattern controlled ☐
- Semi-automatic ☐
- Other (specify) ☐

Machines/equipment:
- Analine-dye aging equipment ☐
- Autoclave ☐
- Balling machine ☐
- Batting machine ☐
- Beaming machine:
  - Beam dryer ☐
  - Beam warper ☐
- Bleaching equipment ☐
- Blending machine ☐
- Blowing machine ☐
- Bobbin machines:
  - Bobbin winding machine ☐
  - Bobbin cleaning machine ☐
- Boiling-off equipment ☐
- Braid making machine ☐
- Breaker machine ☐
- Brushing machine:
  - Corduroy brushing machine ☐
  - Steam brushing machine ☐
- Calender ☐
- Carbonizer equipment:
  - Felt carbonizer ☐
  - Wool carbonizer ☐
- Carding machine ☐
- Chinchilla machine ☐
- Clarifier ☐
- Cloth processing machines and equipment:
  - Cloth bleaching range ☐
  - Cloth finishing range ☐
  - Cloth measuring range ☐
  - Cloth mercerizing range ☐
  - Cloth oiling machine ☐
  - Cloth reeling machine ☐
  - Cloth sanding machine ☐
  - Cloth shrinking equipment ☐
  - Cloth skeining and reeling machine ☐
  - Cloth spreading machine ☐
  - Cloth washing machine ☐
- Coating machine:
  - Fabric coating machine ☐
  - Twine coating machine ☐
- Coating and embossing machine ☐
- Combining machine ☐
- Cooling equipment ☐
- Cordage and twine machines:
  - Cord doubling and twisting machine ☐
  - Cord impregnating equipment ☐
  - Paper tape making machine ☐
  - Paper twisting machine ☐
  - Rope strand-forming machine ☐
  - Rope twisting machine ☐
- Covering machine ☐
- Creels ☐
- Crimping machine ☐
- Cutting machine:
  - Corduroy cutting machine ☐
  - Die cutting machine ☐
  - Felt cutting machine ☐
- Decating equipment ☐
- Dampening-spray machine ☐
- Dyeing equipment ☐
- Electrifier equipment ☐
- Embroidery machine ☐
- Extractor ☐
- Felting machine ☐
- Flocking machine ☐
- Frames:
  - Pulling in frame ☐
  - Doubling and twisting frame ☐
- Fulling machine ☐
- Garnetting machine ☐
- Hair picking machine ☐
- Heddles ☐
- Hooking machine ☐
- Humidifying equipment ☐
- Hydraulic press ☐
- Jacquard pattern card cutter ☐
- Kier boiling equipment ☐
- Knot tying machine ☐
- Knife grinding machine ☐
- Lace making machine ☐
- Leasing machine ☐
- London shrinking equipment ☐
- Looms:
  - Jacquard loom ☐
  - Needle loom ☐
  - Loom winding machine ☐
  - Ring loom ☐
- Mangle ☐
- Marking machine ☐
- Mixing machine:
  - Chemical solution mixer ☐
  - Dye mixing machine ☐
  - Size mixer ☐
- Napping machine ☐

- Net making machine ☐
- Nicking machine ☐
- Opening machine ☐
  - Bale opening machine ☐
- Open soaping machine ☐
- Package dyeing equipment ☐
- Padding making machine ☐
- Pick pulling machine ☐
- Plissé machine ☐
- Printing machines:
  - Drum printing machine ☐
  - Novelty printing machine ☐
  - Silk screen printing machine ☐
- Quilling machine ☐
- Rag picker machine ☐
- Reeds ☐
- Reeling machines:
  - Rope coiling machine ☐
  - Twine reeling machine ☐
  - Reeling and tubing machine ☐
- Ribbon making machine ☐
- Ribbon lapping machine ☐
- Roll down machine ☐
- Rope processing machines:
  - Rope silica washing machine ☐
  - Rope soaping machine ☐
  - Rope tarting machine ☐
- Roving machine ☐
  - Roving frame ☐
- Sanforizing machine ☐
- Schreiner embossing machine ☐
- Scouring machine ☐
- Sewing machine ☐
- Shear grinding machine ☐
- Shearing machine ☐
- Shuttles ☐
- Shuttle boxes ☐
- Silk creping machine ☐
- Silk spreading machine ☐
- Singeing equipment ☐
- Sizing equipment ☐
- Skein processing machines:
  - Skein winding machine ☐
  - Skein yard-dyeing equipment ☐
- Slasher machine ☐
- Slitting and twisting machine ☐
- Sliver lapping machine ☐
- Slubbing machine ☐
- Spinning machine ☐
- Spooling machine ☐
- Spray machine ☐
- Staple processing machine ☐
- Steaming equipment ☐
- Stenciling machine ☐
- Striker machines:
  - Strike-off machine ☐
  - Strike-out machine ☐
- Super-loft twisting machine ☐
- Tailing machine ☐
- Taslan machine ☐
- Tentering machine ☐
  - Tenter frame ☐
- Thread making machine ☐
- Tin-Whiz machine ☐
- Top-dyeing equipment ☐
- Tufting machine ☐
- Twisting machine ☐
  - Uptwister machine ☐
- Unifil machine ☐
- Vacuum filter machine ☐
- Warping machines:
  - Warp coiling machine ☐
  - Warp dyeing equipment ☐
  - Warp tying machine ☐
- Washing machine ☐
- Waste cleaning machine ☐
- Waterproofing equipment ☐
- Waxing machine ☐
- Winding machine ☐
- Wool picking machine ☐
- Wool washing machine ☐
- Worsted winding machine ☐
- Wringing machine ☐
- Yarn processing machine:
  - Yarn bleaching machine ☐
  - Yarn conditioning-spray machine ☐
  - Yarn mercerizing machine ☐
  - Yarn polishing machine ☐
  - Yarn texturizing machine ☐
  - Yarn washing and bleaching machine ☐
  - Yarn winding machine ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Knives ☐
  - Screwdrivers ☐
  - Wrenches ☐
  - Wirebrushes ☐
  - Needles ☐
  - Scissors ☐
  - Rakes ☐
  - Hammers ☐
  - Punches ☐
  - Files ☐
  - Steel picks ☐
  - Reed hooks ☐
  - Other (specify) ☐

Power tools:
- Electric drills ☐
- Grinding wheels ☐
- Soldering irons ☐
- Power rivet guns ☐
- Other (specify) ☐

Workaids:

Measuring instruments:
- Micrometers ☐
- Feeler gages ☐
- Rulers ☐
- Viscosimeter ☐
- Hydrometer ☐

Grain scales ☐
Flat gages ☐
Pin gages ☐
Tensiometer ☐
Densitometer ☐
Tapes ☐
Other (specify) ☐

Production orders ☐
Product specifications ☐
Material specifications ☐
Standard samples ☐
Pattern charts ☐
Formulas ☐
Holding devices and jigs ☐
Production reports ☐
Requisition forms ☐
Standard forms ☐
Other (specify) ☐

PRODUCTS

Record an "X" to indicate products worked on or produced.

Cotton broad woven fabrics:
- Airplane cloth ☐
- Alpacas ☐
- Automotive fabrics ☐
- Awning stripes ☐
- Bags and bagging ☐
- Bandage cloth ☐
- Bark cloth ☐
- Basket weave fabrics ☐
- Bathmats ☐
- Batiste ☐
- Bedspreads ☐
- Bird's-eye diaper cloth ☐
- Bombazine ☐
- Book cloth ☐
- Broadcloth ☐
- Brocade ☐
- Buckram ☐
- Bunting cloth ☐
- Cambric ☐
- Camouflage nets ☐
- Canton flannels ☐
- Canvas ☐
- Casement cloth ☐
- Chafer fabrics ☐
- Cheese bandages ☐
- Cheesecloth ☐
- Chenilles ☐
- Chevoits ☐
- Chintz ☐
- Corduroy fabric ☐
- Corset fabric ☐
- Cottonades ☐
- Coutil ☐
- Coverts ☐
- Crash toweling ☐
- Crepe ☐
- Cretonne ☐
- Crinoline ☐
- Damasks ☐
- Denims ☐
- Diaper fabrics ☐
- Dimities ☐
- Dishcloths ☐
- Draperies and drapery fabrics ☐
- Dress fabrics ☐
- Drills ☐
- Duck ☐
- Duvetyn ☐
- Elastic fabrics ☐
- Express stripes ☐
- Filter cloth ☐
- Flannette ☐
- Flannels ☐
- Frieze ☐
- Friezette ☐
- Furniture denim ☐
- Gabardine ☐
- Galatea ☐
- Gauze ☐
- Ginghams ☐
- Glass toweling ☐
- Glove fabric ☐
- Grosgrain ☐

- Handkerchief fabrics ☐
- Hickory stripes ☐
- Huck toweling ☐
- Interlining material ☐
- Jacquard woven fabrics ☐
- Jean fabrics ☐
- Laundry fabrics ☐
- Laundry nets ☐
- Lawns ☐
- Leno cloth ☐
- Long cloth ☐
- Luggage fabric ☐
- Madras ☐
- Marquisettes ☐
- Matelasse ☐
- Messaline ☐
- Mitts ☐
- Moles ☐
- Monk ☐
- Mosquito netting ☐
- Muslin ☐
- Nainsook ☐
- Net and Nettings ☐
- Opalin ☐
- Organdy ☐
- Osnaburgs ☐
- Outing flannel ☐
- Oxfords ☐
- Pajama checks ☐
- Percale ☐
- Percaline ☐
- Pile fabrics ☐
- Pillow tubing ☐
- Pillowcases ☐
- Pin checks ☐
- Pin stripes ☐
- Piques ☐
- Plaids ☐
- Plisse crepe ☐
- Plushes ☐
- Packeting twill ☐
- Pongee ☐
- Poplin ☐
- Press cloth ☐
- Print cloths ☐
- Ratine ☐
- Rep ☐
- Romaines ☐
- Sail cloth ☐
- Sateens ☐
- Scrim ☐
- Scrub cloths ☐
- Seat cover cloth ☐
- Seersuckers ☐
- Sheets and sheeting ☐
- Shirting fabrics ☐
- Shoe fabrics ☐
- Silesia ☐
- Slip cover fabrics ☐
- Stretch fabrics ☐
- Suiting fabrics ☐
- Surgical fabrics ☐
- Table cloth fabrics ☐
- Table damask ☐
- Tapestry fabric ☐
- Tarlatan ☐
- Tentage ☐
- Terry woven fabrics ☐
- Tickings ☐
- Tobacco cloths ☐
- Towels and toweling ☐
- Tracing cloth ☐
- Trouserings ☐
- Tubing, seamless ☐
- Twills ☐
- Typewriter ribbon cloth ☐
- Umbrella cloth ☐
- Upholstery fabrics ☐
- Velours ☐
- Velveteens ☐
- Velvets ☐
- Voiles ☐
- Waffle cloth ☐
- Wash cloths ☐
- Wignan ☐
- Window shade cloth ☐
- Other (specify) ☐

Man-made and silk broad woven fabrics:

- Acetate fabrics ☐
- Acrylic fabrics ☐
- Automobile fabrics ☐
- Bedspreads ☐
- Blanketings ☐
- Canton crepes ☐
- Crepe satins ☐
- Drapery and drapery fabrics ☐
- Dress fabrics ☐
- Duvetyn ☐
- Elastic fabrics ☐
- Failles ☐
- Fiberglass fabrics ☐
- Flat crepes ☐
- French crepes ☐
- Fur type fabrics ☐
- Georgettes ☐
- Glass woven fabrics ☐
- Jacquard woven fabrics ☐
- Leno fabrics ☐
- Linings ☐

- Marquisettes ☐
- Modacrylic fabrics ☐
- Nylon fabrics ☐
- Nytril fabrics ☐
- Paper woven fabrics ☐
- Parachute fabrics ☐
- Pile fabrics ☐
- Plushes ☐
- Polyester fabrics ☐
- Polyethylene woven fabrics ☐
- Polypropylene woven fabrics ☐
- Pongee ☐
- Poplin ☐
- Quilts ☐
- Rayon fabrics ☐
- Saran fabrics ☐
- Serges ☐
- Shantungs ☐
- Shirting fabrics ☐
- Silk fabrics ☐
- Silk cover fabrics ☐
- Spandex fabrics ☐
- Suiting fabrics ☐
- Taffetas ☐
- Tapestry fabrics ☐
- Twills ☐
- Underwear fabrics ☐
- Upholstery fabrics ☐
- Velvets ☐
- Vinal fabrics ☐
- Vinyon fabrics ☐
- Voiles ☐
- Other (specify) ☐

Wool broad woven fabrics:

- Alpacas ☐
- Billiard cloths ☐
- Blankets and blanketings ☐
- Felts ☐
- Flannels ☐
- Haircloth ☐
- Mohairs ☐
- Overcoatings ☐
- Pantings ☐
- Papermakers' felts ☐
- Serges ☐
- Skirtings ☐
- Suitings ☐
- Trouserings ☐
- Upholstery fabrics ☐
- Worsted fabrics ☐
- Other (specify) ☐

Narrow fabrics:

- Apparel webbing ☐
- Auto wind lace ☐
- Banding ☐
- Beltings ☐
- Bindings ☐
- Braids ☐
- Cords ☐
- Corset laces ☐
- Elastic narrow fabrics ☐
- Elastic webbing ☐
- Electric insulating tapes and braids ☐
- Fringes ☐
- Gimps ☐
- Glove lining fabrics ☐
- Hatband fabrics ☐
- Hose fabrics ☐
- Labels ☐
- Lacings ☐
- Ribbons ☐
- Rickrack braid ☐
- Rubber thread and yarns ☐
- Shoe laces ☐
- Slide fasteners ☐
- Spindle banding ☐
- Strapping webs ☐
- Tapes ☐
- Tie tapes ☐
- Trimmings ☐
- Venetian blind tapes ☐
- Webbing ☐
- Wicking ☐
- Zipper tape ☐
- Other (specify) ☐

Man-made, cotton, and silk yarns:

- Acetate yarn ☐
- Acrylic yarn ☐
- Carded yarn ☐
- Carpet yarn ☐
- Combed yarn ☐
- Cordage yarn ☐
- Crochet yarn ☐
- Darning yarn ☐
- Embroidery yarn ☐
- Knitting yarn ☐
- Modacrylic yarn ☐
- Nylon yarn ☐
- Nytril yarn ☐
- Polyester yarn ☐
- Polypropylene yarn ☐
- Rayon yarn ☐

- Saran yarn ☐
- Spinning yarn ☐
- Vinal yarn ☐
- Vinyon yarn ☐
- Weaving yarn ☐
- Other (specify) ☐

Wool yarns:
- Crochet yarn ☐
- Darning yarn ☐
- Embroidery yarn ☐
- Knitting yarn ☐
- Rug yarn ☐
- Thread yarn ☐
- Twisting yarn ☐
- Weaving yarn ☐
- Other (specify) ☐

Threads:
- Cotton thread ☐
- Crochet thread ☐
- Darning thread ☐
- Embroidery thread ☐
- Hand Knitting thread ☐
- Nylon thread ☐
- Polyester thread ☐
- Rayon thread ☐
- Sewing thread ☐
- Spinning thread ☐
- Tatting thread ☐
- Other (specify) ☐

Miscellaneous Textile Goods:

Felt Goods:
- Acoustic felts ☐
- Automotive felts ☐
- Carpet cushions ☐
- Insulating felts ☐
- Ironing board felts ☐
- Lining felts ☐
- Mats ☐
- Pads and Padding ☐
- Pipe and boiler covering ☐
- Polishing felts ☐
- Pressed wool felts ☐
- Punched felts ☐
- Trimming felts ☐
- Other (specify) ☐

Lace goods:
- Bed sets ☐
- Curtains and curtain fabrics ☐
- Edgings ☐
- Galloons ☐

Lace covers:
- Chair covers ☐
- Dresser covers ☐
- Piano covers ☐
- Table covers ☐

Laces:
- Barmen ☐
- Bobbinet ☐
- Levers ☐
- Nottingham ☐

- Netting ☐
- Other (specify) ☐

Processed waste:
- Carbonized rags ☐
- Flock ☐
- Oakum ☐
- Packing ☐
- Wool Shoddy ☐
- Other (specify) ☐

Coated fabrics:

Type of coating:
- Impregnated ☐
- Vaminated ☐
- Metalized ☐

Plastics:
- Pyroxylin ☐
- Resin ☐

- Varnish ☐
- Waxed ☐
- Other (specify) ☐
- Buckram ☐
- Cambric ☐
- Glass cloth ☐
- Glass mats ☐
- Oilcloth ☐
- Tape ☐
- Tubing ☐
- Yarns ☐
- Other (specify) ☐

Reinforcing cord and fabric:
- Cord for reinforcing ☐

Fabric for reinforcing:
- Rubber tires ☐
- Industrial belting ☐
- Fuel cells ☐

- Other (specify) ☐

Non-woven fabrics:
- Bonded fiber textiles ☐
- Bonded fiber fabrics ☐
- Plastic bonded fiber ribbon ☐

- Spunbonded fabrics ☐
- Other (specify) ☐

Cordage and twine:
- Cordage types:
  - Abaca ☐
  - Sisal ☐
  - Henequen ☐
  - Hemp ☐
  - Jute ☐
  - Other fibers (specify) ☐
- Cordage goods:
  - Cargo nets ☐
  - Braided cord ☐
  - Fish nets and seines ☐
  - Fishing lines ☐
- Insulator pads ☐
- Wire rope centers ☐
- Other (specify) ☐

Rope:
- Blasting mats ☐
- Nets ☐
- Slings ☐
- Other (specify) ☐

- Twine ☐
- Fish nets and seines ☐
- Fishing lines ☐
- Trawl twine ☐
- Binder and baler twine ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

VENEER AND PLYWOOD MILL WORK

Inventory

WHAT THE WORKER DOES

Below are listed activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates activities concerned with manufacture of:
- Veneer ☐
- Plywood ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Breaking up rafts, and scaling, sorting, grading and sawing logs for operations ☐
- Peeling, clipping, and grading green veneer for further processing ☐
- Glue spreading, layup, and hot pressing plywood sections together ☐
- Finishing hardwood or softwood plywood panels ☐
- Reduction of bark and waste lumber into wood chip or bark products or hog fuel ☐
- Other (specify) ☐

Reviews or studies:
- Production reports ☐
- Daily cutting records ☐
- Job order specifications ☐
- Job orders ☐
- Production schedules ☐
- Drying charts ☐
- Cutting orders ☐
- Shipping orders ☐
- Maintenance and repair reports ☐
- Quality control specifications ☐
- Test forms ☐
- Other (specify) ☐

Plans or determines:
- Production schedules ☐
- Priority of orders ☐
- Sequences of processing orders ☐
- Species and sizes of veneer of plywood to be manufactured ☐
- Manpower requirements ☐
- Manpower utilization ☐
- Machine and equipment requirements and utilization ☐
- Maintenance and repair activities ☐
- Other (specify) ☐

Prepares:
- Work schedules ☐
- Production schedules ☐
- Cutting orders ☐
- Production status reports ☐

Installs, aligns, and secures in position:
- Saws ☐
- Knives ☐
- Cutters ☐
- Pressure rolls ☐
- Guides ☐
- Stops ☐
- Spray guns ☐
- Other (specify) ☐

Presses pushbuttons on machine console or panelboard to:
- Activate power to controls ☐
- Start machine and machine auxiliaries ☐
- Move workpiece into position for machine operations ☐
- Feed workpiece into cutting tools ☐
- Feed tools onto workpiece ☐
- Set machine guides, stops, and tools for specified operations ☐
- Adjust position of tools ☐
- Reprocess material not meeting specifications ☐
- Move workpiece away from processing machine ☐
- Other (specify) ☐

Moves levers or controls, depresses pedals, or turns valves to:
- Set:
  - Pressure of rolls on workpiece ☐
  - Tension on materials ☐
  - Specified temperature, humidity, and air circulation in driers ☐
- Aline workpiece against:
  - Stops ☐
  - Guides ☐
  - Alining mechanisms ☐
- Regulate:
  - Speed of tools ☐
  - Travel of workpiece ☐
  - Lowering and raising of:
    - Guides ☐
    - Stops ☐
    - Aprons ☐
    - Holding devices or clamps ☐
    - Elevators ☐
    - Stacking tables ☐
    - Unstacking tables ☐
  - Other (specify) ☐

Observes:
- Operations of machines for evidences of malfunctions ☐
- Gages, meters, and instruments for insuring readings meet operational specifications ☐
- Flow of material on material handling equipment to:
  - Adjust speed of operation ☐
  - Detect misalinement of material ☐
  - Detect waste material or foreign matter ☐
- Workers for compliance with safety practices and regulations ☐
- Other (specify) ☐

Material, tool, and equipment requisitions ☐
- Inventory reports ☐
- Quality control reports ☐
- Repair and maintenance reports ☐
- Production schedule revisions ☐
- Other (specify) ☐

Coordinates:
- Flow of materials through production departments ☐
- Operation of department with other department activities ☐
- Worker activities ☐
- Other (specify) ☐

Assigns workers to specific duties ☐

Gives workers directions concerning assigned duties ☐

Inspects machines and equipment for function efficiency ☐

Enforces worker compliance with:
- Established work methods and procedures ☐
- Company regulations ☐
- Safety rules and practices ☐
- Other (specify) ☐

Trains workers in:
- Setup of machines ☐
- Setup and operation of machines, machinery, and equipment ☐
- Controlling equipment ☐
- Performance of assigned duties ☐
- Other (specify) ☐

Evaluates work performance of worker ☐

Initiates personnel actions ☐

Keeps records of worker's time and overtime worked ☐

Recommends changes in processes or use of materials ☐

Other (specify) ☐

WHAT THE WORKER DOES—Continued

- Sets up machines for other workers ☐
- Sets up and operates machines and equipment ☐
- Operates machines ☐
- Controls operation of automatic machines or equipment ☐
- Tends:
  - Presetup or automatic machines ☐
  - Material handling equipment to move materials and products ☐
- Drives:
  - Material handling machines ☐
  - Tug ☐
  - Motorized boats ☐
- Feeds material into machines or onto feed conveyors ☐
- Offbears materials from machines or offbearing conveyors ☐
- Other (specify) ☐

- Inspects or examines:
  - Veneer sheets for:
    - Knots ☐
    - Splits ☐
    - Pitch lines ☐
    - Damage ☐
    - Grain ☐
    - Determining grade and quality ☐
  - Markings on plywood for:
    - Species of wood ☐
    - Grade and quality code ☐
    - Moisture content ☐
    - Need of reprocessing ☐
    - Need for patching ☐
  - Other (specify) ☐

- Measures:
  - Length of logs for cutting into machine stock lengths ☐
  - Thickness of plywood for determining sanding operations ☐
  - Clearances between tools ☐
  - Finished veneer or plywood for conformance with dimensional specifications ☐
  - Other (specify) ☐

- Marks:
  - Symbols on products to indicate:
    - Grade ☐
    - Classification ☐
    - Reprocessing instructions ☐
  - Identifying data on top of:
    - Stacks of veneer or plywood ☐
    - Wrapped packages of products ☐
  - Other (specify) ☐

- Signals workers to stop or start machines or processing operations ☐
- Patches veneer or plywood to improve quality ☐
- Cuts defective sections from product, using hand or power tools ☐
- Prepares patches for repairing defects in products ☐
- Removes materials from material handling equipment ☐
- Stacks material on four-wheel trucks ☐
- Covers finished veneer with paper to prevent scratches ☐
- Shovels or throws waste materials into chipper or hog machine conveyor ☐
- Places slats between sheets of veneer or plywood ☐
- Affixes labels to products ☐
- Lubricates machines ☐
- Cleans machines, equipment, and work area ☐
- Assists in replacing tools in machines ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management ☐
- Superintendent ☐
- Supervisors ☐
- Other Supervisors ☐
- Quality Control Personnel ☐
- Machine Operators ☐
- Helpers ☐
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary ☐
- High School ☐

- Vocational School ☐
- Technical School ☐
- On-the-job training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate subjects and courses that develop worker skills.

Subjects and Courses:
- Practical Arithmetic ☐
- Use and Care of Tools ☐
- Use and Care of Machinery ☐
- Log scaling ☐
- Veneer and Plywood Grading ☐
- Maintenance of Cutting Tools:
  - Hog and Chipper Knives ☐
  - Band Saws ☐
  - Circular Saws ☐
- Wood Seasoning ☐
- Veneer Drying ☐
- Log Handling Vehicles ☐
- Plywood and Laminating Processes:
  - Theory of Wood Adhesion ☐
  - Chemical Nature of Wood Adhesives ☐
- Gluing Process Technology ☐
- Wood Drying Technology ☐
- Elements of Supervision ☐
- Human Relations ☐
- Estimating ☐
- Other (specify) ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Type of machine or equipment:
- Automatic ☐
- Automated ☐
- Console controlled ☐
- Electronically controlled ☐
- Manually operated ☐
- Pushbutton operated ☐
- Remote controlled ☐
- Semi-automatic ☐
- Other (specify) ☐

Machines:
- Air compressor ☐
- Barking machines:
  - Drum type ☐
  - Hydraulic type ☐
  - Lathe type ☐
  - Ring type ☐
- Block bucking, grading, sorting machine ☐
- Chipping machine ☐
- Clipping machine ☐
- Core splitting machine ☐
- Glue machines:
  - Edge-gluing machine ☐
  - Glue mixing machine ☐
  - Glue spreading machine ☐
  - Jointer-edge gluing machine ☐
- Hog machine ☐
- Jointer ☐
- Material handling machines:
  - Conveyors ☐
  - Apron conveyor ☐
  - Chain conveyor ☐
    - Bull-chain conveyor ☐
    - Endless-belt conveyor ☐
  - Hoists:
    - Electric hoist ☐
    - Hydraulic hoist ☐
  - Lathe charging and centering machine ☐
  - Log handling machine ☐
  - Log handling boats ☐
  - Rail-transfer car ☐
  - Rotary sorting table ☐
  - Tipple ☐
    - Triple-tipple ☐
- Plywood paneling machines:
  - Panel presses:
    - Cold press ☐
    - Hot clamp press ☐
    - Heated multi-tiered hydraulic press ☐
  - Panel sizing machine:
    - Skinner sizing saw ☐
    - Panel length cutoff saw ☐
  - Panel bagging machine ☐
- Sanding machines:
  - Belt sander ☐
    - Endless belt sander ☐
  - Drum sander ☐
  - Drum and belt sanding machines ☐
  - Multi-belt sander ☐
- Saws:
  - Drag saw ☐
  - Double cut-off saw ☐
  - Gang saw ☐

- Groove cutting machine ☐
- Groove cutting and staining machine ☐
- Shearing machine ☐
- Slicing machine ☐
- Splicing machine ☐
- Veneer peeling lathe ☐
- Veneer finishing machine:
  - Staining machine ☐
  - Waxing machine ☐
  - Polishing machine ☐
- Multi-spindle drill press ☐
- Other (specify) ☐

Tools:

- Handtools:
  - Brushes ☐
  - Chisels ☐
  - Handsaws ☐
  - Hand irons ☐
  - Hand rollers ☐
  - Hatchets ☐
  - Hooked poles ☐
  - Palm and needle ☐
  - Peavies ☐
  - Pike poles ☐
  - Planes ☐
  - Pliers ☐
  - Prybars ☐
  - Riveting tools ☐
  - Screwdrivers ☐
  - Staple remover ☐
  - Scrapers ☐
  - Shovels ☐
  - Wrenches ☐
  - Spatulas ☐
  - Knives ☐
  - Band cutters ☐
  - Branding iron ☐
  - Putty knives ☐
  - Brooms ☐
  - Shovels ☐
- Power handtools:
  - Portable mixer ☐
  - Portable router ☐
  - Portable router and saw ☐
  - Putty gun ☐
  - Sanding board ☐
  - Spray gun ☐
  - Stapling gun ☐
- Other (specify) ☐

Equipment:

- Cant steaming vats ☐
- Driers:
  - Drying ovens ☐
  - Veneer continuous drying system ☐
  - Jet drier and feeding system ☐
- Metal detecter equipment ☐
- Moisture measuring equipment ☐
- Acetylene cutting equipment ☐
- Welding equipment ☐
- Electrical charge glue drying equipment ☐
- Other (specify) ☐

Work Aids:

- Measuring instruments ☐
- Calipers ☐
- Graduated containers ☐
- Micrometers ☐
- Scales:
  - Bench scales ☐
  - Floor scales ☐
  - Steel tapes ☐
  - Scale sticks ☐
- Other (specify) ☐

- Load tickets ☐
- Identification sheets ☐
- Marking pencils ☐
- Tally sheets ☐
- Formulas ☐
- Wax sticks ☐
- Chalk ☐
- Job order specifications ☐
- Job orders ☐
- Requisitions ☐
- Four-wheel trucks ☐
- Paint applicators ☐
- Quality control specifications ☐
- Daily cutting orders ☐
- Daily cutting records ☐
- Rubber stamps ☐
- Tape dispenser ☐
- Tape ☐
- Sponges ☐
- Labels ☐
- Production orders ☐
- Glue report ☐
- Grade-break-down report ☐
- Coating machine roller log ☐
- Production schedules ☐
- Shipping orders ☐
- Labels ☐
- Magnifying devices ☐
- Testing forms ☐
- Testing reports ☐
- Mirrors ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate products processed or manufactured.

- Paneling:
  - Hardwood panels ☐
  - Softwood panels ☐
- Plywood:
  - Hardwood faced plywood ☐
  - Softwood plywood ☐
- Siding ☐
- Veneer:
  - Faced veneer ☐
  - Hardwood veneer ☐
  - Non-faced veneer ☐
  - Softwood veneer ☐
  - Technical veneer ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐
- Subsurface and Space ☐
- Transportation ☐
- Utilities ☐
- Other (specify) ☐

WOODWORKING

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Directs and coordinates woodworking activities in a:
- Planing mill ☐
- Wooden container manufacturing company ☐
- Cooperage shop ☐
- Wood fabricating and preserving company ☐
- Plant manufacturing turned, shaped, or carved wooden goods or articles ☐
- Other (specify) ☐

Supervises, and coordinates activities of, workers engaged in:
- Setting up woodworking machines for production operations ☐
- Setting up and operating woodworking machines to produce wood products ☐
- Tending pre-set up machines to produce wood products or parts ☐
- Laying out work for woodworking operations ☐
- Fitting and assembling fabricated wood parts into specified products ☐
- Inspecting parts and final products for conformance with standards ☐
- Handworking wood parts into finished products ☐
- Controlling equipment to treat wood parts or products ☐
- Other (specify) ☐

Plans:
- Manpower requirements ☐
- Work schedules ☐
- Production procedures ☐
- Machine requirements ☐
- Worker training requirements ☐
- Inspection procedures ☐
- Other (specify) ☐

Prepares:
- Cost estimates for jobs ☐
- Estimates on man-hour requirements ☐
- Worker schedule[illegible] ☐
- Evaluations on wo[illegible]rformance ☐
- Records of production and worker activities ☐
- Reports on production and department activities ☐
- Other (specify) ☐

Trains workers in:
- Overall craft duties ☐
- Setup of machines and equipment ☐
- Operation of machines and equipment ☐

- Safety practices [ ]
- Work practices [ ]
- Other (specify) [ ]

Demonstrates:
- Setup procedures on woodworking machines [ ]
- Use of measuring devices and work aids [ ]
- Other (specify) [ ]

- Assigns workers to specific duties [ ]
- Inspects parts or products for conformance with specifications [ ]
- Interprets production orders, product specifications, and drawings for workers [ ]
- Advises workers on methods and procedures for solving work problems [ ]
- Enforces worker compliance with established work procedures and safety rules [ ]
- Requisitions tools, materials, and equipment [ ]
- Coordinates worker and department activities [ ]
- Other (specify) [ ]

- Sets up machines or equipment for other workers [ ]
- Sets up and operates variety of woodworking machines [ ]
- Operates woodworking machine [ ]
- Controls operation of equipment [ ]
- Tends pre-setup or automatic machines [ ]
- Assists worker in operating machine or equipment [ ]
- Feeds workpiece or material into machine [ ]
- Offbears workpiece or product from machine [ ]
- Other (specify) [ ]

Reads, reviews, or examines:
- Blueprints [ ]
- Drawings [ ]
- Product samples [ ]
- Product specifications [ ]
- Material lists [ ]
- Job orders [ ]
- Production orders [ ]
- Processing specifications [ ]
- Other (specify) [ ]

Determines from data:
- Setup of machines or equipment [ ]
- Machine operations required [ ]
- Sequences of work or machine operations [ ]
- Type of cutting head or woodworking tool required [ ]
- Product layout methods and procedures [ ]
- Product fabricating methods and procedures [ ]
- Product assembly methods and procedures [ ]
- Machine or equipment control settings [ ]
- Other (specify) [ ]

Selects and installs on drum, arbor, spindle, or in chuck of machine specified:
- Knives [ ]
- Saws [ ]
- Cutters [ ]
- Drills and bits [ ]
- Profiling tools [ ]
- Abrasive or sanding materials [ ]

Installs, aligns, and secures in machine:
- Stops [ ]
- Guides [ ]
- Jigs or holding fixtures [ ]
- Workpiece [ ]
- Other (specify) [ ]

Turns handwheels, opens valves, or moves levers and controls to:
- Start machine or equipment [ ]
- Adjust angle of machine table [ ]
- Feed workpiece into cutting tools [ ]
- Feed tools onto workpiece [ ]
- Set cutter heads or tools for prescribed operation [ ]
- Maintain tension on materials [ ]
- Set prescribed clearances between rollers [ ]
- Adjust operation of machine [ ]
- Reposition guides, stops, and rollers [ ]
- Regulate rotation speed of material [ ]
- Regulate cutting speed of and pressure of rollers on workpiece [ ]
- Regulate temperatures, humidity, and material flow [ ]
- Stop machine [ ]
- Other (specify) [ ]

Lays out on workpiece:
- Patterns [ ]
- Templates [ ]
- Cutting lines [ ]
- Product design [ ]
- Inter-related parts [ ]
- Other (specify) [ ]

Fabricates wooden parts of products, using:
- Woodworking machines [ ]

- Woodworking handtools [ ]
- Other (specify) [ ]

Assembles parts into products by:
- Matching grain of inter-related parts [ ]
- Boring holes in parts for fasteners [ ]
- Placing inter-related parts together to ascertain fit [ ]
- Handworking parts to specified fit, using woodworking tools [ ]
- Fitting and fastening parts together, using:
  - Nails [ ]
  - Dowels [ ]
  - Screws [ ]
  - Glue [ ]
  - Hinges [ ]
  - Pins [ ]
  - Staples [ ]
  - Bolts [ ]
- Adjusting fit of moving parts of product to specifications [ ]
- Attaching hardware to parts to complete assembly [ ]
- Repositioning moving parts to obtain specified fit and prevent binding [ ]
- Other (specify) [ ]

Inspects:
- Milled or planed lumber for defects, as:
  - Knots [ ]
  - Stains [ ]
  - Pitch pockets [ ]
  - Worm holes [ ]
  - Defective milling or planing [ ]
- Wood products for defects, as:
  - Mismatched grain [ ]
  - Blemishes [ ]
  - Loose joints [ ]
  - Holes [ ]
  - Splits [ ]
  - Faulty assembly [ ]
  - Missing hardware [ ]
- Other (specify) [ ]

Measures parts or products for conformance with:
- Dimensional specifications [ ]
- Specified alignment and squareness [ ]
- Model or sample [ ]
- Other (specify) [ ]

Grades:
- Lumber according to standard classifications [ ]
- Wood products according to extent of defects [ ]
- Other (specify) [ ]

Marks lumber or wood products for rework or salvage of parts [ ]
Stacks lumber or wood products [ ]
Fills wood pores, cracks, or other indentions with filler materials [ ]
Removes foreign material from parts [ ]
Sands rough spots to prepare surfaces for finishing [ ]
Brushes surfaces with glue to prepare for application of other materials [ ]
Marks or stamps grade on products [ ]
Changes cutter heads or other tools in machines [ ]
Loads and unloads materials into or from:
- Transportation conveyances [ ]
- Drying kilns [ ]

Stacks lumber or products in storage yard [ ]
Reworks products to specifications [ ]

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Management [ ]
- Supervisors [ ]
- Other Supervisors [ ]
- Machine Operators [ ]
- Craftsman [ ]
- Helpers [ ]
- Laborers [ ]
- Apprentices [ ]
- Other (specify) [ ]

EDUCATION AND TRAINING

Record an "X" to indicate education and training requirements.

- Elementary [ ]
- High School [ ]
- Jr. College [ ]
- Technical Training [ ]

- Vocational Training ☐
- Military Training ☐
- On-the-job Training ☐
- Other (specify) ☐

SUBJECTS AND COURSES

Record an "X" to indicate courses and subjects that develop skills for the occupation.

Related Subjects and Courses:
- Practical Arithmetic ☐
- Applied Chemistry ☐
- Care and Use of Handtools ☐
- Care and Use of Measuring Instruments ☐
- Blueprint Reading ☐
- Mechanical Drawing ☐
- Trade Terminology ☐
- Safety Practices and Regulations ☐
- Human Relations ☐
- Elements of Supervision ☐
- Efficient Use of Materials ☐
- Other (specify) ☐

Cabinet Making and Millwork:
- History and Orientation of Mill: Cabinet Work ☐
- Applied Blueprint Reading and Detailing ☐
- Advanced Detailing ☐
- Principles of Layout Processes ☐
- Advanced Layout Processes ☐
- Fundamentals of Stock Billing ☐
- Applied Stock Billing Procedures ☐
- Introduction to Hand Woodworking Tools ☐
- Fundamental Application of Handtool Skills ☐
- Hand and Power Tool Applications ☐
- Introduction to Machine Tools ☐
- Fundamentals of Machine Operations ☐
- Advanced Machine Operations ☐
- Materials of Cabinetmaking ☐
- Standards of Construction ☐
- Advanced Cabinetry ☐
- Estimating of Cabinetry and Paneling ☐
- Fundamentals of Wood Molder ☐
- Knife Grinding ☐
- Detailing and Stock Billing ☐
- Other (specify) ☐

MACHINES, TOOKS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

Machine types:
- Automatic ☐
- Dual purpose ☐
- Electronic ☐
- Manual controlled ☐
- Multi-purpose ☐
- Semi-automatic ☐
- Other (specify) ☐

Machines:
- Adzing and boring machine ☐
- Air compressor ☐
- Bending press ☐
- Boring machines:
  - Cluster boring machine ☐
  - Double end boring machine ☐
  - Gang boring machine ☐
  - Horizontal boring machine ☐
  - Multi-spindle boring machine ☐
  - Vertical boring machine ☐
- Box blanking machine ☐
- Box branding machine ☐
- Box lining machine ☐
- Carving machine:
  - Single spindle carver ☐
  - Multi-spindle carver ☐
- Chipper ☐
- Chucking machines:
  - Chucking and sawing machine ☐
  - Double end chucking machine ☐
- Clothespin machine ☐
- Corrugated fastener machine ☐
- Croze machine ☐
- Dadoing machine ☐
- Dovetail machine ☐
- Dowel machines:
  - Doweling machine ☐
  - Dowel inserting machine ☐
  - Dowel pointer machine ☐
- Drill press ☐
- Embossing machine ☐
- Framing mill ☐
- Gluing machine ☐
- Grooving machine ☐
- Hoop driving machine ☐
- Incising machine ☐

- Jointer machine ☐
- Kiln rail transfer machine ☐
- Linderman machine ☐
- Mortizing machines:
  - Chain mortiser ☐
  - Chisel mortiser ☐
  - End mortiser ☐
- Planer ☐
- Plugging machine ☐
- Pole peeling machine ☐
- Router:
  - Single spindle router ☐
  - Multi-spindle router ☐
- Sanders:
  - Belt sander ☐
  - Cylinder sander ☐
  - Contour sander ☐
  - Disk sander ☐
  - Drum sander ☐
  - Endless belt sander ☐
  - Lathe sander ☐
  - Multiple drum sander ☐
  - Speed belt sander ☐
  - Stroke belt sander ☐
  - Turning sander ☐
- Saws:
  - Band ripsaw ☐
  - Bandsaw ☐
  - Band scroll saw ☐
  - Casey saw ☐
  - Circular ripsaw ☐
  - Dado saw ☐
  - Double cutoff saw ☐
  - Gang ripsaw ☐
  - Jigsaw ☐
  - Miter saw ☐
  - Multiple cutoff saw ☐
  - Radial arm saw ☐
  - Ripsaw ☐
  - Swinging cutoff saw ☐
  - Table cutoff saw ☐
  - Tilting saw ☐
  - Treadle cutoff saw ☐
  - Variety saw ☐
  - Warble saw ☐
- Shapers:
  - Double spindle shaper ☐
  - Profile shaper ☐
- Shaver machine ☐
- Squeezer machine ☐
- Tenoner machine ☐
  - Double end tenoner machine ☐
- Tying machine:
- Woodworking lathes:
  - Back roll lathe ☐
  - Copy lathe ☐
  - Handle lathe ☐
  - Swing type lathe ☐
- Other (specify) ☐

- Tools:
  - Adzes ☐
  - Bits ☐
  - Chisels ☐
  - Counterbores ☐
  - Countersinks ☐
  - Files ☐
  - Gouges ☐
  - Hammers ☐
  - Levels ☐
  - Mallets ☐
  - Planes ☐
  - Pliers ☐
  - Putty knives ☐
  - Rasps ☐
  - Scribers ☐
  - Screwdrivers ☐
  - Vises ☐
  - Wrenches ☐
  - Other (specify) ☐
- Equipment:
  - Drying ovens ☐
  - Kilns ☐
  - Glue heating units ☐
  - Preserving and impregnating equipment ☐
  - Retorts ☐
  - Other (specify) ☐
- Work Aids:
  - Clamps ☐
  - Calipers ☐
  - Diagrams ☐
  - Blueprints ☐
  - Drawings ☐
  - Patterns ☐
  - Production orders ☐
  - Templates ☐
  - Product specifications ☐
  - Holding fixtures ☐
  - Jigs ☐
  - Rules ☐
  - Sample product ☐
  - Model ☐
  - Sketches ☐
  - Work orders ☐
  - Rework orders ☐
  - Inspection reports ☐
  - Report forms ☐
  - Straight edge ☐
  - Square ☐
  - Other (specify) ☐

MILLWORK AND RELATED WOOD PRODUCTS

Record an "X" to indicate product worked on or produced.

Millwork Products:
- Awnings ☐
- Blinds (shutters) ☐
- Brackets ☐
- Cabinets (to be built in) ☐
- Door trim ☐
- Doors ☐
- Dormers ☐
- Floor baseboard ☐
- Garage doors (overhead) ☐
- Jalousies (wood frame) ☐
- Louver windows (wood frame) ☐
- Medicine cabinets (to be built in) ☐
- Moldings ☐
- Newel posts ☐
- Ornamental woodwork:
  - Cornices ☐
  - Mantels ☐
- Porch work ☐
- Sash, door and window ☐
- Shutters, door and window ☐
- Stair railings ☐
- Staircases and stairs ☐
- Trellises ☐
- Venetian blind slats ☐
- Wainscots ☐
- Weather stripping ☐
- Window screens (wood frames) ☐
- Other (specify) ☐

Prefabricated Buildings and Structural Members:
- Arches (laminted lumber) ☐
- Prefabricated:
  - Buildings ☐
  - Chicken coops ☐
  - Corn cribs ☐
  - Houses ☐
  - Marinas ☐
  - Portable buildings ☐
  - Sauna rooms ☐
- Structural members:
  - Trusses ☐
  - Timbers ☐
- Other (specify) ☐

Wooden Containers:
- Nailed and Lock Corner Boxes and Shook:
  - Ammunition boxes ☐
  - Box cleats ☐
  - Boxes ☐
  - Carrier trays ☐
  - Cigar boxes ☐
  - Egg cases ☐
  - Greenhouse flats ☐
  - Packing cases ☐
  - Shipping cases ☐
  - Shook ☐
  - Tool chests ☐
  - Trunk slats ☐
- Wirebound Boxes and Crates:
  - Boxes ☐
  - Crates:
    - Berry ☐
    - Butter ☐
    - Fruit ☐
    - Vegetable ☐
- Veneer and Plywood Containers:
  - Baskets ☐
  - Fruit ☐
  - Vegetable ☐
  - Berry cups ☐
  - Drums ☐
  - Hampers ☐
  - Market baskets ☐
  - Pails ☐
- Coopered Products:
  - Barrels ☐
  - Buckets ☐
  - Casks ☐
  - Firkins and Kits ☐
  - Hogsheads ☐
  - Kegs ☐
  - Tanks ☐
  - Tierces ☐
  - Tubs ☐
  - Vats ☐
- Shaped Wood Articles:
  - Applicators ☐
  - Bakers equipment ☐
  - Bearings ☐
  - Beekeeping supplies ☐
  - Bentwood products ☐
  - Blocks:
    - Butcher blocks ☐
    - Tackle ☐
    - Tailor's pressing blocks ☐
  - Boards:
    - Bagasse ☐
    - Bulletin:
      - lip ☐
    - Ironing ☐
    - Meat ☐
    - Pastry ☐
  - Boot and shoe lasts ☐
  - Bowls ☐

- Bungs ☐
- Bushings ☐
- Cloth winding reels ☐
- Clothes horses ☐
- Clothes poles ☐
- Clothespins ☐
- Clubs (policemans) ☐
- Curtain stretchers ☐
- Dishes ☐
- Dowels ☐
- Extension plants ☐
- Faucets ☐
- Fellies ☐
- Fenang ☐
- Frames:
  - Medallion ☐
  - Mirror ☐
  - Photograph ☐
  - Picture ☐
- Furniture inlays ☐
- Garment hangers ☐
- Gavels ☐
- Grain measures ☐
- Hammers (meat) ☐
- Hampers ☐
- Handles for products ☐
- Hubs ☐
- Industrial platforms ☐
  - Pallets ☐
- Knobs ☐
- Ladders ☐
- Ladder jacks ☐
- Last sole patterns ☐
- Letters ☐
- Mallets ☐
- Mashers ☐
- Masts ☐
- Mauls ☐
- Moldings for picture frames ☐
- Oars ☐
- Paint sticks ☐
- Pencil slots ☐
- Plugs ☐
- Poles:
  - Flagpoles ☐
  - Tentpoles ☐
- Pulleys ☐
- Rollers ☐
- Rolling pins ☐
- Rulers ☐
- Rules ☐
- Saddle trees ☐
- Scaffolds ☐
- Scoops ☐
- Shoe stretches ☐
- Shoe trees ☐
- Signboards ☐
- Skewers ☐
- Skids ☐
- Spars ☐
- Spigots ☐
- Spokes ☐
- Spools ☐
- Stakes ☐
- Toilet seats ☐
- Toothpicks ☐
- Trays ☐
- Trophy bases ☐
- Wood floor ☐
- Woodenware ☐
- Yardsticks ☐
- Other (specify) ☐

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

- Agriculture ☐
- Commercial:
  - Business Service ☐
  - Food and Beverage ☐
  - Lodging Service ☐
  - Personal Service ☐
  - Printing and Publishing ☐
  - Repair Service ☐
  - Sales ☐
- Communications ☐
- Conservation ☐
- Construction ☐
- Correctional ☐
- Educational ☐
- Entertainment ☐
- Exhibition Center ☐
- Financial ☐
- Government Service ☐
- Industrial ☐
- Insurance ☐
- Legal ☐
- Library ☐
- Medical Service ☐
- Military ☐
- Nonprofit ☐
- Office Service ☐
- Recreation ☐
- Social Service ☐

Subsurface and Space ☐ Utilities ☐
Transportation ☐ Other (specify) ☐

EXAMPLE OF DATA GATHERING USING A TASK INVENTORY

The following pages illustrate the use of a Task Inventory in collecting information from a worker. A CARPENTER who has worked in the craft for many years was interviewed using the inventory for "Building and Construction Trades." The items checked indicate the range of experience which a typical worker has gained. It will be noted that even some supervisory tasks have been checked because of work performed as a lead CARPENTER. The information from a completed Task Inventory can be used to develop a job description and to identify specific knowledges and skills which are required to perform the work. The user can also gain information from items not checked.

Typically, a CARPENTER constructs, erects, installs, and repairs structures the primary components of which are made of wood, using carpentry handtools and power tools and following blueprints or sketches. The worker also builds stairs, install partitions and cabinets, hangs doors, installs metal hardware on wood parts, weather strips and insulates wooden structures, fits and installs trim, wallboard, paneling and windows, and lays subfloor and hardwood flooring. The worker builds and erects foundation forms and attaches siding of various types to the exterior of buildings. Almost any structure utilizing wood framing or scaffolding requires the CARPENTER'S craft in building. Some workers specialize in certain aspects of the craft and perform only those items peculiar to the specialty and belong to union locals that are designated for that type of work. The following inventory with marked responses indicates the worker's involvement with specific job factors.

EXAMPLE
BUILDING AND CONSTRUCTION TRADES: CARPENTER

Inventory

WHAT THE WORKER DOES

Listed below are activities that might be involved in a job-worker situation. Record an "X" after each activity relating to the job being analyzed.

Supervises, and coordinates activities of, workers engaged in building and construction craft activities as:

- Carpentry ☒
- Plastering ☐
- Waterproofing ☐
- Concrete masonry ☐
- Bricklaying ☐
- Stone setting ☐
- Tile setting ☐
- Pipefitting ☐
- Structural steel erection ☐
- Plumbing ☐
- Asbestos and insulation work ☐
- Paperhanging ☐
- Lathing ☐
- Pipelaying ☐
- Concrete and asphalt paving ☐
- Floorlaying ☐
- Glaziery ☐
- Roofing ☐
- Rigging ☐
- Elevator constructing ☐
- Tank building and erecting ☐
- Marble setting ☐
- Monument setting ☐
- House moving ☐
- Ornamental and architectural iron erection ☐
- Mining ☐
- Drywall applicating ☒
- Insulating work ☒
- Other (specify) ☐

Operating equipment as:

- Grading equipment ☐
- Excavating equipment ☐
- Concrete paving equipment ☐
- Asphalt paving equipment ☐
- Dredging equipment ☐
- Pile driving equipment ☐
- Welldrilling equipment ☐
- Tunneling equipment ☐
- Other (specify) ☐

Materials:
- Handling equipment ☐
- Transporting equipment ☐
- Mixing equipment ☐
- Pumping equipment ☐

Other (specify) ☐

Tending:
- Concrete or plaster:
  - Batching equipment ☐
  - Pumping equipment ☐
  - Spraying equipment ☐
  - Other (specify) ☐

Plans and determines:
- Manpower requirements ☐
- Worker schedules ☐
- Construction procedures ☒
- Maintenance procedures ☒
- Inspection requirements ☒

Prepares work schedules ☒
Assigns workers to duties ☒
Gives work directions to workers ☒
Interprets building plans, structural specifications, drawings, and technical data ☒
Trains workers in:
- Craft duties ☒
- Operation of machines and equipment ☒
- Safety practices and regulations ☒

Advises workers in methods and procedures for solving work problems ☒
Coordinates:
- Craft activies with other craft activities ☐
- Worker activities ☒
- Building inspection activities ☐

Enforces worker compliance with established work procedures, regulations, and safety rules ☐
Recommends promotions, demotions, discharges, and disciplinary actions ☒
Evaluates workers performance ☒
Requisitions materials, tools, and equipment ☒
Requisitions machine maintenance and repair ☒
Keeps records of workers performance ☐
Prepares reports on construction or maintenance activities ☒
Other (specify) ☐

Operates equipment to:
- Grade construction sites ☐
- Excavate earth and other materials ☐
- Pave highways and streets ☐
- Dredge sand and other materials ☐
- Drive pilings ☐
- Drill wells ☐
- Bore tunnels ☐
- Handle materials ☐
- Transport materials ☐
- Mix materials ☐
- Pump materials ☐
- Other (specify) ☐

Moves levers, turns controls, or depresses pedals to:
- Start or stop equipment ☐
- Guide or steer equipment ☐
- Position attachments for specific operations ☐
- Perform operations ☐
- Reposition attachments or equipment ☐
- Other (specify) ☐

Tends equipment or machines to:
- Mix batches of concrete, plaster, or other covering materials ☐
- Pump concrete, plaster, or other materials ☐
- Spray materials on structure ☐
- Maintain pressure in underground structures or chambers (locks) ☐
- Other (specify) ☐

Constructs, erects, or builds:
- Wooden structures and fixtures ☒
- Structural steel framework ☐
- Tanks ☐
- Concrete forms and pouring chutes ☒
- Scaffolding ☒
- Fences ☒
- Metal framework ☐
- Stairways ☒
- Elevators or moving stairways ☐
- Other (specify) ☐

Sets:
- Marble slabs or blocks ☐
- Stone ☐
- Tile ☐
- Artificial stone ☐
- Monuments ☐
- Other (specify) ☐

Fits and installs:
- Steam, gas, water, or acid piping systems ☐
- Plumbing systems and fixtures ☐

- Pneumatic tube conveyor systems ☐
- Pneumatic control system piping ☐
- Cabinets ☒
- Window frames ☒
- Partitions ☒
- Doors ☒
- Door frames ☒
- Weather stripping ☒
- Wooden trim ☒
- Metal hardware ☒
- Structural steel ☒
- Structural glass ☐
- Other (specify) ☐

Lays:
- Brick structural tile and block materials ☐
- Terrazzo floors ☐
- Flooring and subflooring ☒
- Floor coverings and foundation materials ☐
- Pipe for storm drains, sewers, and water mains ☐
- Other (specify) ☐

Applies:
- Composition weatherboard on exterior surfaces ☒
- Siding materials on exterior surfaces ☒
- Decorative and protective paint on building surfaces ☐
- Stucco on exterior surfaces ☐
- Plasterboard onto walls and ceilings ☒
- Waterproofing material on exterior surfaces ☒
- Calking compounds in cracks and crevices ☒
- Coats of plaster on interior surfaces ☐
- Sizing compound on work surfaces ☐
- Roofing materials on structures ☐
- Insulating materials on equipment and piping systems ☐
- Other (specify) ☐

Fastens:
- Lathing materials on walls and ceilings ☐
- Acoustical tile on ceilings ☐
- Facing brick on sides of structures ☐
- Insulation materials onto walls, floors, and ceilings ☐
- Paneling on walls ☒
- Other (specify) ☐

Blows insulating materials into spaces of structures ☐

Finishes: ☐
- Wooden floors ☒
- Concrete surfaces ☐
- Plaster surfaces ☐
- Stucco surfaces ☐
- Other (specify) ☐

Reviews, studies, or analyzes:
- Blueprints ☒
- Sketches ☒
- Building plans ☒
- Architects drawings ☒
- Bills of materials ☒
- Work order specifications ☒
- Structural specifications ☒
- Construction plans ☒
- Contract specifications ☒
- Other (specify) ☐

Determines:
- Building sequences ☒
- Construction sequences ☒
- Installation sequences ☒
- Methods and procedures for specified work ☒
- Other (specify) ☐

Calculates:
- Material requirements ☒
- Equipment requirements ☒
- Job costs ☒
- Building angles and courses ☒
- Other (specify) ☐

Measures:
- Structural areas ☐
- Dimensions of structure ☒
- Material length, width, or thickness ☐
- Other (specify) ☐

Selects specified materials ☐

Lays out:
- Reference points and lines ☒
- Material cutting lines ☒
- Assembly lines ☐
- Work guidelines ☒
- Foundation lines ☒
- Grading lines ☒
- Fence lines ☒
- Other (specify) ☐

Prepares surfaces or areas for work by:
- Sanding ☒
- Cleaning ☒
- Chipping ☐
- Scraping ☐

- Filling holes, cracks, crevices, or joints ☐
- Scaling ☐
- Sealing ☐
- Removing fixtures or obstacles ☐
- Masking or covering non-work areas ☐
- Removing rough or defective surfaces ☐
- Other (specify) ☐

Cuts material into specified:
- Shape ☒
- Size ☒
- Length ☒
- Width ☒
- Thickness ☒
- Other (specify) ☐

Spreads:
- Concrete to specified depth ☐
- Mortar on brick, structural tile, blocks and other materials ☐
- Stucco onto exterior surfaces ☐
- Plaster onto walls or over lathing ☐
- Mastic or other adhesive on floor or foundation coating ☐
- Paste on wallpaper ☐
- Putty on sash of windows ☐
- Other (specify) ☐

Joins, secures, or fastens material by:
- Nails ☒
- Metal straps ☒
- Staples ☒
- Dowels ☒
- Threaded joints ☒
- Calked joints ☒
- Rivets ☐
- Soldered joints ☐
- Brazing ☐
- Welding ☒
- Wire ☒
- Hangers ☒
- Brackets ☒
- Screws ☒
- Bolts ☒
- Anchor bolts ☒
- Cement ☐
- Adhesive ☐
- Mastic ☐
- Glazier points ☐
- Mortar ☐
- Pins ☒
- Glue ☒
- Clips ☒
- Tie rods ☐
- Braces ☒
- Putty ☐
- Other (specify) ☐

Mixes by hand machine:
- Paint pigments, vehicle, and coloring ☐
- Wallpaper paste ☐
- Sealing compounds ☐
- Mortar ☐
- Other (specify) ☐

Verifies alinement of:
- Parts ☒
- Structures ☒
- Stone ☐
- Brick ☐
- Installation ☐
- Other (specify) ☐

Breaks or cuts off excess material ☒

Drills hole for:
- Attaching material on structures ☒
- Installing material ☒

Fills joints with:
- Calking materials ☐
- Lead ☐
- Calking compound ☐
- Sealing compound ☐
- Mortar ☐
- Other (specify) ☐

Cuts and bends:
- Pipe into specified size and shape ☐
- Lathing to fit openings, corners, and projections ☐

Thread pipe ☐

Digs foundation trenches ☐

Pours concrete foundations ☐

Mounts hanger and brackets ☒

Replace defective piping ☐

Brushes, sprays, or rolls paint on surfaces ☐

Cleans equipment and tools ☐

Matches design and pastes paper on wall ☐

Polishes stone or marble ☐

Positions glass in window sashes ☐

Assembles glass doors and windows in metal frames ☐

Smooths wallpaper on wall ☐

Inspects piping system for defects ☐

Tests piping systems for leaks ☐

Paints and insulates pipes and fittings ☐

Molds concrete expansion joints ☐

Repairs defects in material ☐

Presses brick or tile into mortar ☐

WHAT THE WORKER DOES—Continued

- Nails or cements waterproof materials on roof ☐
- Digs postholes and sets posts ☐
- Stretches wire and attaches it onto posts ☐
- Replaces leaky faucet washers ☐
- Opens clogged drains ☐
- Attaches molding around windows, doors, and other openings ☐
- Directs workers to mix plaster or other materials ☐
- Wires lathing strips on furring ☐
- Wires lathing channels onto overhead structural framework ☐
- Presses sealing tape over compound and joints in drywall ☐
- Fills hopper of mixing machine with materials ☐
- Turns valves to regulate pumps and air compressor ☐
- Guides nozzle of calking gun along crevices in structure ☐
- Presses lever to discharge compound into crevice ☐
- Carries materials to craftsmen ☐
- Stacks materials adjacent to worker ☐
- Cleans finished structures ☐
- Signals operating personnel actions to be taken ☒
- Attaches slings onto material for hoisting operations ☒
- Guides materials into position ☐
- Positions beams for supporting structure ☒
- Jacks house up and places dollies under beams ☐
- Attaches towing bar onto dollies ☐
- Other (specify) ☐

COMMUNICATION RESPONSIBILITIES

Record an "X" to indicate communication responsibilities.

- Building Contractor ☒
- Trade Contractor ☐
- Construction Superintendent ☒
- Supervisors ☐
- Supervisors of Other Trades ☐
- Workers ☒
- Helpers ☒
- Apprentices ☒
- Other (specify) ☐

EDUCATION AND TRAINING

Record an "X" to indicate education or training required.

- Elementary ☐
- Junior High School ☐
- High School ☐
- Junior College ☐
- Vocational School ☐
- Technical Training ☐
- On-the-job Training ☐
- Apprenticeship Training (see apprentice listing) ☒
- Other (specify) ☐

BUILDING TRADES AND CONSTRUCTION APPRENTICESHIPS

Record an "X" to indicate type of apprenticeship training.

- Asbestos and Insulation Worker ☐
- Bricklayer ☐
- Carpenter ☒
- Cement Mason ☐
- Elevator Constructor ☐
- Floor Layer ☐
- Glazier ☐
- Iron Worker:
  - Ornamental Iron Worker ☐
  - Reinforcing Worker ☐
  - Structural Steel Worker ☐
- Lather ☐
- Marble Mason ☐
- Painter and Decorator ☐
- Paperhanger ☐
- Pipefitter ☐
- Plasterer ☐
- Plumber ☐
- Roofer ☐
- Sprinkler Fitter ☐
- Steamfitter ☐
- Stone Mason ☐

- Terrazzo Worker ☐
- Tile Setter ☐
- Operating Engineer:
  - Construction Equipment Operator ☐
  - Dredge Operator ☐
  - Pile Driver ☐
  - Hoisting and Portable Equipment Operator ☐
- Other (specify) ☐

SUBJECT AND COURSES

Record an "X" to indicate subjects or courses that develop skills for the occupation.

- Trade Related Subjects and Courses:
  - Applied Science ☐
  - Applied Chemistry ☐
  - Applied Physics ☐
  - Architectural Drawing ☒
  - Blueprint Reading ☒
  - Building Regulations and Codes ☒
  - Electrical Theory ☐
  - Electronic Theory ☐
  - Interpretation of Drawings ☐
  - Estimating ☐
  - Foremanship and Supervision ☐
  - Human Behavior ☐
  - Inspection ☐
  - Practical Geometry ☐
  - Pracitical Trigonometry ☐
  - Safety Practices ☒
  - Safety Regulations ☒
  - Sketching ☒
  - Trade Mathematics ☐
  - Trade Science ☐
  - Welding ☒
  - Other (specify) ☐
- Trade Theory:
  - Asbestos and Insulation Worker ☐
    - Insulating Materials ☐
    - Pipe Coverings ☐
    - Insulating:
      - Steam Piping ☐
      - Ventilation Systems ☐
      - Machinery and Equipment ☐
      - Refrigeration Equipment ☐
      - Refrigeration Piping ☐
      - Air Conditioning Piping ☐
    - Methods of Application ☐
    - Tools and Their Uses ☐
    - Insulation Covering Materials ☐
    - Methods of Covering Insulation ☐
    - Other (specify) ☐
  - Bricklayer:
    - History of Masonry ☐
    - Masonry Materials ☐
    - Application of Masonry Materials ☐
    - Tool Terminology ☐
    - Tool Description, Purposes, and Uses ☐
    - Functional Principles of Masonry Tools ☐
    - Types of Bonding Materials ☐
    - Types and Uses of Reinforcing Materials ☐
    - Safe Use of Tools, Scaffolding, and Materials ☐
    - Mixing and Application of Mortars ☐
    - Laying of:
      - Cement Blocks ☐
      - Common Brick ☐
      - Architectural Terra Cotta ☐
      - Facing Brick ☐
      - Refractory Brick ☐
    - Construction of:
      - Walls ☐
      - Corners ☐
      - Angles and Courses ☐
      - Pilasters ☐
      - Piers ☐
      - Footings ☐
      - Columns ☐
      - Chimneys ☐
      - Smokestacks ☐
      - Fireplaces ☐
      - Hearths ☐
      - Reinforced Masonry ☐
    - Cleaning and Preparing Surfaces ☐
    - Pointing ☐
    - Calking and Grouting ☐
    - Other (specify) ☐
  - Carpenter:
    - History and Orientation ☐
    - Introduction to Handtools and Materials ☒
    - Handtool Skills ☐
    - Principles of Machine Tools ☐
    - Machine Tools Operation ☐
    - Forms, Foundations, and Concrete ☒
    - Principles of Construction ☒
    - Framing Construction ☒
    - Principles of Exterior Finish ☐
    - Application of Interior Finish ☐

- Introduction to Stairbuilding ☒
- Layout and Construction of Stairs ☒
- Heavy Construction Principles ☒
- Form Detailing and Construction ☒
- Hardware and Installation ☒
- Door Hanging ☒
- Cabinet Work ☒
- Other (specify) ☐

Cement Mason:
- Masonry Materials ☐
- Trade Tools and Equipment ☐
- Forms and Form Construction ☐
- Working Characteristics of Materials ☐
- Concrete Working Techniques ☐
- Concrete Finishing Techniques ☐
- Expansion Joints ☐
- Concrete Handwork ☐
- Concrete Machine Work ☐
- Other (specify) ☐

Elevator Constructor:
- Materials and Equipment Controls ☐
- Installing:
  - Guide Rails ☐
  - Hoisting Equipment and Motors ☐
  - Counterweights ☐
  - Control Systems ☐
  - Signaling Equipment ☐
  - Safety Devices ☐
- Elevator Testing and Adjusting ☐
- Elevator Maintenance and Repair ☐
- Other (specify) ☐

Floor Layer:
- Materials of Trade ☐
- Types of Adhesives ☐
- Surface Preparation ☐
- Work Layout ☐
- Material Cutting, Fitting, Molding ☐
- Trade Tools and Equipment ☐
- Tile Laying Techniques ☐
- Linoleum Laying Techniques ☐
- Other (specify) ☐

Glazier:
- Trade History and Oreintation ☐
- Trade Tools and Equipment ☐
- Materials ☐
- Glass Specifications ☐
- Types and Qualities of:
  - Glass ☐
  - Metal ☐
  - Special Fastening Devices ☐
- Job Site Layout Methods ☐
- Methods of Cutting and Installing:
  - Glass ☐
  - Mirrors ☐
  - Glass Doors and Partitions ☐
- Manufacture and Preparation of:
  - Insulated Glass Units ☐
  - Corrugated Glass Units ☐
- Types and Application of Structural Glass ☐
- Other (specify) ☐

Iron Worker:
- History and Scope of Ironworking Trade ☐
- Rope Knots and Hitches ☐
- Care and Handling of Rope ☐
- Handtools ☐
- Cable Working Loads ☐
- Hardware ☐
- Cranes, Derricks, and Poles ☐
- Principles of Ironworking Trade ☐

Structural Principles:
- Ornamental Principles ☐
- Reinforced Iron Principles ☐

Materials of Trade:
- Rolled Steel Shapes ☐
- Rolled Sheet Steel ☐
- Corrugated Materials ☐
- Fabricated Steel Shapes ☐
- Ornamental Materials ☐
- Fasteners ☐

- Classes of Leverages ☐
- Gears and Ratios ☐
- Weights of Materials ☐
- Care and Use of Transit ☐
- Scaffolding and Ladders ☐
- Structural Steel Erection ☐

Machinery, Moving and Rigging:
- Reeving of Rope ☐
- Use and Care of Wire Rope ☐
- Splicing of Fiber and Wire Rope ☐
- Rigging Hardware and Attachments ☐
- Hoisting Equipment ☐
- Guy Lines and Anchorages ☐
- Jacks, Rolls, and Skids ☐

Structural Steel Erection:
- Fabrication Procedures ☐
- Material Identification ☐
- Material Handling and Transporting ☐
- Connecting, Hooking-on, Taglining ☐
- Plumbing and Leveling ☐
- Mechanical Fasteners ☐
- Connections of Structural Steel ☐
- Structural Rigging ☐

Parts and Erection Methods of:
- Towers ☐

- Buildings ☐
- Bridges ☐
- Structural Safety ☐
- Signalling Methods ☐

Reinforcing Ironwork:
- Identification of Materials ☐
- Hand and Bending Tools ☐
- Fabrication ☐
- Accessories ☐
- Unloading and Sorting of Materials:
  - Types of Material Ties ☐
  - Footings ☐
  - Placing ☐
  - Joint Preparation ☐
  - Welding Procedures ☐

Ornamental Ironwork:
- Handtools ☐
- Drills and Tap ☐
- Doors and Elevator Fronts ☐
- Curtain Wall Construction ☐
- Sashes ☐
- Stairways ☐
- Handrails ☐
- Layout ☐
- Fasteners ☐

Sheeting and Fencing:
- Sheeting Materials ☐
- Sheeting Erection Methods ☐
- Service Station Materials ☐
- Service Station Erection Methods ☐
- Fencing Materials ☐
- Fencing Erection Methods ☐

Other (specify) ☐

Lather:
- Lathing Materials ☐
- Trade Tools and Equipment ☐
- Lathing Methods and Techniques ☐
- Specifications for Lathing ☐
- Lathing and Metal Layout ☐
- Structural Components ☐
- Lathing Accessories ☐

Installation of:
- Lathing ☐
- Lathing Accessories ☐

Lathing:
- Partitions and Walls ☐
- Ceilings ☐
- Exterior Surfaces ☐

Other (specify) ☐

Painter and Decorator:
- History and Background of Trade ☐
- Health and Safety Measures ☐
- Materials of Trade and Uses ☐
- Basic Uses of Trade Tools ☐
- Laws Governing Worker ☐
- Preparing Colors and Materials ☐
- Methods of Applying Materials ☐
- Hardwood and Hardwood Finishes ☐
- Architectural Decorating Practices and Finishes ☐
- Basic Graining and Marbling ☐
- Mixing and Matching of colors ☐
- Principles of Color Harmony ☐
- Color Chemistry ☐
- Psychology of Color ☐
- Care of Tools and Equipment ☐
- Other (specify) ☐

Paperhanger:
- Materials of Trade ☐
- Tools of Trade ☐
- Selection and Use of Tools ☐
- Preparation of Surfaces ☐
- Application of:
  - Wallpaper ☐
  - Canvas ☐
  - Muslin ☐
  - Fabrics ☐
- Systems of Color Notation ☐
- Principles of Color Harmony ☐
- Other (specify) ☐

Plasterer:
- History and Development of Trade ☐
- Chemistry of Plastering Materials ☐
- Proportions of Materials ☐
- Lath and Masonry Bases ☐
- Plastering Materials ☐
- Job Conditions affecting Plastering ☐
- Plaster Cracks and Causes ☐
- Dotting, Pressed Screeds, and Water Leveling ☐
- Job Layout Problems ☐
- Acoustical Plastering ☐
- Effect of Weather on Plastering ☐
- Effect of Poor Construction and Application ☐
- Mitering Breaks and Returns ☐
- Geometrical Layout Problems ☐
- Molding and Casting ☐
- Application of Materials ☐
- Finishing Surfaces ☐
- Other (specify) ☐

Pipe and Steam Fitter:
- History and Development of Trade ☐

- Science of Heating and Refrigeration ☐
- Dimension Standards ☐
- Characteristics and Use of Piping ☐
- Mathematical Measurements ☐
- Steam Power ☐
- Process Piping, Theory and installation ☐
- Principles of Heating Systems ☐
- Operation of Heating Systems ☐
- Standards for Heating Equipment ☐
- Low Pressure Heating Systems ☐
- Air Conditioning ☐
- Plumbing Fixtures, Installation, Applications, Testing, Servicing ☐
- Layout and Installation of Air Conditioning Piping System ☐
- Other (specify) ☐

Plumber:

- Plumbing Materials ☐
- Trade Tools and Uses ☐
- Principles and Practices of Water Supply and Distribution ☐
- Formulas ☐
- Charts and Conversion Tables ☐
- Coefficients and Factors ☐
- Pipe Size Calculations ☐
- Structural Standards of Fixture Design ☐
- Fixtures and Special Applications ☐
- Layout for Plumbing and Pipefitting ☐
- Composition, Manufacture, and General Specifications for Pipe and Fittings ☐
- Bacteriological Considerations ☐
- Backflow Conditions and Prevention ☐
- System Design for Prevention of Water Pollution ☐
- Conventional and Practical Layout Methods ☐
- Piping Layout ☐
- Layout Methods ☐
- Fabrication and Erection of Piping ☐
- Installation and Testing of Plumbing Fixtures and Appliances ☐
- Other (specify) ☐

Roofer:

- Materials of Trade ☐
- Use and Care of Tools and Equipment ☐
- Preparation of Work Surfaces ☐
- Installation Methods for Slate, Tile, Terra Cotta, Paper ☐
- Application Methods for Tar, Pitch, Asphalt, Gravel, and Paper ☐
- Principles of Waterproofing and Damproofing ☐
- Procedures of Waterproofing and Damproofing ☐
- Other (specify) ☐

Sprinkler Fitter:

- History of Trade ☐
- Classes of Systems ☐
- Elements of Design ☐
- Underground Piping ☐
- Sprinkler Heads ☐
- Valves ☐
- Dry System ☐
- Mechanical Alarms ☐
- Electric Alarms ☐
- Fire Department Connection Alarms ☐
- Supervisory Alarms ☐
- Special Sprinkler Systems ☐
- Thermostatically Controlled Systems ☐
- Details of Systems Installation and Design ☐
- Rigging and Scaffolding ☐
- Elements of Costs ☐
- Job Planning ☐
- Other (specify) ☐

Stone Mason - Marble Mason:

- History of Masonry Trade ☐
- Application of Masonry Methods ☐
- Tool Terminology ☐
- Tool Descriptions, Purposes, Uses ☐
- Functional Principles of Masonry Tools ☐
- Masonry Materials ☐
- Types of Bonding Materials ☐
- Types and Uses of Reinforcing and Fastening Materials ☐
- Mixing and Application of Bonding Materials ☐
- Layout of Work ☐
- Fitting and Setting of Material on Walls, Floors, Stairs, and Arches ☐
- Cleaning of Materials ☐
- Pointing and Grouting ☐
- Preparation of Working Surfaces ☐
- Other (specify) ☐

Tile Setter:

- History of Tile, Mortar, and Materials ☐
- Tools of Trade and Uses ☐
- Surface Preparation ☐
- Work Layout ☐
- Use of Hawk and Trowel ☐
- Strip Setting ☐
- Open Joint and Cove Installation of Glazed Mosaic, Ceramic, Quarry, and Cement Tile ☐

- Installing Tile on:
  - Floors ☐
  - Walls ☐
  - Drainboards ☐
  - Ceilings ☐
  - Jambs ☐
  - Curbs ☐
  - Gutters ☐
  - Columns ☐
  - Stairs ☐
  - Domes ☐
  - Arches ☐
  - Panels ☐
  - Fireplaces ☐
- Tile Classifications ☐
- Glass Mosaics ☐
- New Materials ☐
- Other (specify) ☐

- Operating Engineer:
  - Historical Background ☐
  - Safety and First Aid ☐
  - Use of Tools:
    - Handtools and Gages ☐
    - Power Tools ☐
    - Shop Tools and Equipment ☐
  - Types of Instruments:
    - Leveling Instruments ☐
    - Measuring Instruments ☐
    - Uses of Instruments ☐
  - Vehicle Code ☐
  - Rigging:
    - Cable and Wire Rope ☐
    - Clamps and Fittings ☐
    - Slings and Spreaders ☐
    - Blocks, Pulleys, and Swivels ☐
    - Weight and Materials ☐
    - Proper Lifting Procedures ☐
  - Introduction to Internal Combustion Engines ☐
  - Lubrication ☐
  - Introduction to Basic Electricity ☐
  - Introduction to Basic Hydraulics ☐
  - Converters ☐
  - Fluid Drives ☐
  - Gears and Reductions ☐
  - Transmissions ☐
  - Introduction to Basic Pneumatics ☐
  - Differentials and Rear Ends ☐
  - U-Joints and Drives ☐
  - Orientation to Heavy Equipment ☐
  - Construction Equipment Operators
    - Grade Plans and Earthwork:
      - Earth Moving ☐
      - Importance of Good Safety Practices ☐
      - Measurements Used in Earthwork ☐
      - Slopes, Grades, and Stakes ☐
      - Types of Soil and Effects on Earthwork ☐
    - Materials and Their Applications:
      - Aggregates and Their Uses ☐
      - Concrete ☐
      - Asphalt ☐
      - Application of Asphalt Pavement ☐
      - Application of Concrete Pavement ☐
    - Shovel and Crane Type Equipment:
      - Shovel ☐
      - Crane ☐
      - Clamshell ☐
      - Dragline ☐
      - Backhoe ☐
      - Gradeall ☐
      - Mucking Machine ☐
      - Excavator ☐
      - Pile Driver ☐
    - Material Hoisting and Handling:
      - Equipment ☐
      - Cranes and Derricks ☐
      - Belt Type Conveyors ☐
    - Tractors:
      - Crawler Type Bulldozers and Rippers ☐
      - Wheel Type Bulldozers ☐
    - Graders:
      - Motorized ☐
      - Towed ☐
    - Scrapers:
      - Self Powered Type Scrapers ☐
      - Towed ☐
      - Tandem ☐
      - Self Loading ☐
      - Land Levelers ☐
    - Loaders:
      - Front End ☐
      - Side ☐
      - Rear ☐
      - Overhead ☐
    - Compaction Equipment:
      - Tandem, Three Wheel, Grid and Offset Rollers ☐
      - Sheepfoot, Pneumatic and Wobbly Wheel Rollers ☐
      - Vibrating Compactors and Tampers ☐
    - Work Cycles:
      - Advanced Concepts in Measurement ☐
      - Understanding Plans and Specifications in Earthwork ☐
    - Job Methods:
      - Haul Engineering ☐
      - Ditches, Ditch Gradients, Earthwork and Equipment Selection ☐
      - Bids, Contracts, and Performances ☐
- Dredge Operator:
  - Introduction to Dredging ☐

- Types of Dredges ☐
- Dredge Plant Components ☐
- Dredge Operation ☐
- Seamanship:
  - Anchor ☐
  - Small Boat Handling ☐
  - Compass ☐
  - Weather ☐
  - Marinspike Seamanship ☐
- Plant Equipment Operator ☐
- Rock, Sand and Gravel Operator:
  - Crushers ☐
    - Types of Crushers ☐
  - Batch Plants ☐
    - Processing Plants ☐
- Concrete:
  - Grizzlies and Screens ☐
  - Feeders ☐
  - Aggregate Washing and Separating Equipment ☐
  - Kinds of Batching Equipment ☐
  - Batch Operation ☐
  - Trolley Batcher ☐
  - Single Material Batcher ☐
  - Aggregate Measurement ☐
  - Weigh Batcher ☐
  - Cement Weigh Hoppers ☐
  - Multiple Batcher ☐
  - Batching Systems ☐
  - Fixed Plants ☐
  - Mass Concrete Plant ☐
  - Transit Mix Fixed Plant ☐
  - Plant Maintenance and Safety ☐
- Asphalt:
  - Central Mixing Plants ☐
  - Cold Aggregate Feeder or Hopper ☐
  - Cold Aggregate Elevator ☐
  - Dryer Operation ☐
  - Dust Operation ☐
  - Hot Elevator ☐
  - Graduation Control Unit ☐
  - Bituminous Mixer ☐
  - Fines Feeder ☐
  - Boilers ☐
  - Belt Conveyor ☐
  - Bucket Loader ☐
  - Bitumen Heater ☐
  - Asphalt Kettle ☐
  - Asphalt Distributor ☐
  - Asphalt Tank ☐
  - Trailer Tank ☐
  - Liquid Storage Tank ☐
  - Water Tank ☐
  - Small Continuous Mix Plant ☐
- Conveyors:
  - Types of Conveyors ☐
  - Construction of Conveyors ☐
  - Conveyor Parts ☐
  - Adjustment ☐
  - Alinement ☐
  - Holdbacks ☐
  - Hoppers and Loading ☐
  - Spillage ☐
  - Troughs and Skirts ☐
  - Trippers ☐
  - Safety Devices ☐
  - Inclines ☐
  - Capacities ☐
  - Shiftable Frames ☐
  - Rose Belt ☐
  - Extendible Conveyor ☐
  - Rough Loader ☐
  - Stacker ☐
- Controls:
  - Type of Controls ☐
  - Operation of Controls ☐
- Specialized Tools:
  - Special Tools Needed on Batch Plants ☐
  - Tools and Equipment Needed for Service and Lubrication ☐
- Job Methods, Planning and Layout:
  - Selection of Equipment for Job ☐
  - Selection of Materials Needed ☐
  - Troubleshooting ☐
  - Job Problems ☐
  - Methods of Measurement ☐
- Heavy Duty Repairman:
  - Welding ☐
    - Principles of Welding and Cutting ☐
    - Oxyacetylene ☐
    - Electric ☐
    - Soldering ☐
    - Preventive Maintenance ☐
    - Safety ☐
- Internal Combustion Engines:
  - Engine Types ☐
  - Stationary Parts ☐
  - Major Moving Parts ☐
  - Typical Diesel Engines ☐
  - High Compression Gas Engines ☐
  - Auxiliary System ☐
- Crawler Track and Wheel Systems:
  - Frames ☐
  - Springs ☐
  - Undercarriage:
    - Track ☐
    - Rollers ☐
    - Idlers ☐

- Sprockets ☐
- Truck Frames ☐
- Rebuilding Techniques ☐

Preventive Maintenance ☐

Safety ☐

Bases and Carriers:
- Stationary ☐
- Mobile ☐

Tires and Care:
- Types of Tires ☐
- Air Pressure ☐
- Wheel Failure ☐
- Tire Repair ☐

Brake Systems:
- Mechanical ☐
- Hydraulic ☐
- Electrical ☐
- Vacuum ☐
- Brake Booster ☐
- Repairs ☐

Clutches and Frictions:
- Description and Operation ☐
- Inspection and Maintenace ☐
- Minor Adjustments ☐
- Replace Clutch Springs and Release Bearings ☐
- Clutch Troubleshooting ☐

Steering Systems:
- Conventional ☐
- Hydraulic Ram ☐
- Electrical ☐
- Clutch Brake ☐
- Tracks ☐
- Wheels ☐
- Legs ☐

Electricity:
- Coils ☐
- Distributors ☐
- Starter Motors and Controls ☐
- Alternators, Regulators, Generators and Rectifiers ☐
- Heavy Duty Lightning Systems ☐
- Ignition Systems ☐
- Storage Batteries ☐
- Tune-Up Procedures ☐
- Accessories ☐

Hydraulics:
- Introduction ☐
- Liquid Flow ☐
- Pipe Fittings and Seals ☐
- Valves and Pumps ☐
- Hydraulic Systems ☐

Pneumatics:
- Basic Pneumatics ☐
- Compressors ☐

Convertors:
- Uses ☐
- Types ☐
- Charging System ☐
- Lockup ☐
- Overrunning Clutch ☐
- Heat Exchangers ☐
- Types of Fluids ☐
- Filter System ☐

Fluid Drive:
- Types of Fluid Drive ☐
- Service and Maintenance ☐

Gear and Reductions ☐
- Multiple Speed ☐
- Multiple Drive ☐

Transmissions:
- Function ☐
- Gearing ☐
- Gear Material ☐
- Types ☐
- Disassembly ☐
- Cleaning and Inspection ☐
- Reassembly ☐
- Adjustment ☐

Final Drives:
- Single Reduction ☐
- Planetary ☐

Differentials and Rear Ends:
- Single Reduction Axles ☐
- Two-speed Axles ☐
- Tandem Drive Axles ☐
- Axle Shifting Systems ☐

U-Joints and Drive Lines:
- Types ☐
- Inspection ☐

Manual and Parts Book ☐
- Use and Familiarization ☐

Engine Principles and Theory ☐

Fuel Systems and Carburetion ☐

Air Intake and Exhaust Systems ☐

Cooling and Lubrication Systems ☐

Electricity:
- Theory of Electricity ☐
- Parallel Circuits ☐
- Series Circuits ☐
- Ohms Law ☐
- Fundamentals of Electricity ☐
- Circuits, Symbols, and Conductors ☐
- Relays and Switches ☐
- Magnetism and Induction ☐
- Electrical Measurement ☐
- AC and DC Generation ☐
- Motors ☐
- DC Circuits ☐

- Primary and Secondary Batteries ☐
- AC Current ☐
- Direct Current Motors and Controls ☐
- Single and Three Phase Circuits ☐
- Transformers and Regulators ☐
- Polyphase Induction Motors ☐
- Synchronous Motors ☐
- Set Synchronous Apparatus ☐
- Single Phase Motors ☐
- Circuit-Protective and Switching Equipment ☐
- Electrical Instruments and Measurement ☐
- Electron Tubes and Devices ☐
- Types and Sizes of Wire ☐
- Wire Connections and Joints ☐
- Wiring of Heavy Appliances ☐
- Isolated and Standby Power Plants ☐

Special Engines:

- Gasoline ☐
- Diesel ☐
- Steam ☐
- Electric ☐

Hydraulic Systems:

- Basic Types of Hydraulic Systems ☐
- Similarity to Air Pressure ☐
- Pascals Law ☐
- Hydraulic Properties of Oil ☐
- Basic Hydraulic Pump ☐
- Advantages of Hydraulic Transmission ☐
- Hydraulic Terms ☐
- Symbols and Circuits ☐
- Pumps and Motors ☐
- Basic Valve Types ☐
- Cylinder Structure ☐
- Type of Hoses ☐
- Seals ☐
- Choosing Right Oil ☐
- Purposes of Reservoirs ☐
- Damaging Effect of Dirt ☐
- Accumulators ☐
- Testing Criteria ☐
- Checking Operating Times ☐
- Primary Visual Checks ☐
- Bypass Testing ☐
- In-Line Testing ☐

Pneumatic Systems:

- Basic Systems ☐
- Compressors ☐
- Portable Type ☐
- Construction ☐
- Rating ☐
- Pressure Control ☐
- Heat ☐
- Rotary Compressors ☐
- Reciprocating Compressors ☐
- Operation ☐
- Air Lines and Accessories ☐
- Air Motors ☐
- Tanks ☐
- Governors ☐
- Other (specify) ☐

LICENSURE OR CERTIFICATION

Record an "X" to indicate licenses or certification required.

- Federal ☐
- State ☐
- County ☐
- City ☐
- Other (specify) ☐

UNION AFFILIATION

Record an "X" to indicate union affiliation.

International Unions:

- Bricklayers, Masons, and Plasterers International Union of America ☐
- Brotherhood of Painters, Decorators, and Paperhangers of America ☐
- International Association of Heat and Frost Insulators and Asbestos Workers ☐
- International Association of Bridge, Structural, and Ornamental Iron Workers ☐
- International Union of Operating Engineers ☐
- International Union of Elevator Constructors ☐
- Laborers International Union of North America ☐
- Operative Plasterers and Cement Masons International Association of United States and Canada ☐

- United Association of Journeyman and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada ☐
- United Brotherhood of Carpenters and Joiners of America ☒
- United Rubber, Cork, Linoleum, and Plastic Workers Union ☐
- United Slate, Tile, and Composition Roofers, Damp and Waterproof Workers Association ☐
- Wood, Wire, and Metal Lathers International Union ☐
- Other (specify) ☐

Unions:

- Acoustical, Drywall, Insulation, and Scaffolding ☐
- Acoustic Drywall Workers ☐
- Asbestos Workers ☐
- Bricklayers ☐
- Bricklayers and Masons ☐
- Bricklayers and Stonemasons ☐
- Bricklayers and Tile Setters ☐
- Carpenters ☒
- Carpenters and Joiners ☒
- Cement Masons ☐
- Cement Finishers and Plasterers ☐
- Elevator Constructors ☐
- Floor Layers ☐
- Glaziers and Glass Workers ☐
- Gunite Workers ☐
- Hardwood Floor Carpenters ☐
- Hod Carriers and Laborers ☐
- House Movers ☐
- Iron Workers ☐
- Iron Workers Ornamental and Architectural Local ☐
- Iron Workers and Shopmans Local ☐
- Laborers ☐
- Laborers and Plaster Tenders ☐
- Lathers ☐
- Lathers Nail and Wood Local ☐
- Linoleum, Carpet, and Soft Tile Layers ☐
- Marble Masons ☐
- Operating Engineers ☐
- Operating Engineers Hoisting and Portable Local ☐
- Ornamental Iron Workers Local ☐
- Painters ☐
- Painters and Decorators ☐
- Painters, Decorators, and Paperhangers ☐
- Pile Drivers ☐
- Pile Drivers, Bridge, Wharf, and Dock Builders Local ☐
- Plasterers ☐
- Plasterers and Cement Finishers ☐
- Plasterers and Cement Masons ☐
- Plumbers ☐
- Plumbers and Fitters ☐
- Plumbers and Steamfitters ☐
- Reinforced Iron Workers ☐
- Refrigeration, Air Conditioning, and Fitters ☐
- Roofers ☐
- Shinglers ☐
- Shinglers and Drywall Installers ☐
- Sprinkler Fitters ☐
- Steamfitters ☐
- Terrazzo Workers and Machine Operators ☐
- Tile Layers ☐
- Tile Setters ☐
- Tile Marble, and Terrazzo Helpers ☐
- United Mine Workers, Construction Local ☐
- Other (specify) ☐

PRODUCTS

Record an "X" to indicate product produced.

Construction Products:

- Abutments ☒
- Airports ☐
- Alleys ☐
- Aluminum Mills ☐
- Antennas ☐
- Apartments ☒
- Aqueducts ☐
- Asylums ☐
- Athletic Fields ☐
- Auditoriums ☒
- Ball Parks ☒

- Boilers ☐
- Bomb Shelters ☒
- Breakwaters ☐
- Bridges ☒
- Canals ☒
- Canal Locks ☒
- Canal Gates ☒
- Caissons ☒
- Cemetaries ☐
- Cesspools ☐
- Chemical Plants ☐
- Chimneys ☐
- Churches ☒
- Clean Rooms ☒
- Cofferdams ☒
- Conduits ☐
- Culverts ☒
- Curbs ☐
- Dams ☒
- Dikes ☒
- Drainage Canals ☒
- Elevators ☒
- Electric Power Transmission Towers ☐
- Escalators ☒
- Farm Buildings ☒
- Factories ☒
- Fences ☒
- Financial Institutions ☒
- Fire Escape ☒
- Flood Control Projects ☒
- Freeways ☒
- Garages ☒
- Gas Mains ☐
- Golf Courses ☐
- Grain Elevators ☒
- Harbors ☒
- High Rise Buildings ☒
- Highways ☒
- Hospitals ☒
- Hotels ☒
- Houses ☒
- Hydroelectric Plants ☒
- Industrial Furnaces ☒
- Industrial Ovens ☒
- Industrial Plants ☒
- Institutional Buildings ☒
- Irrigation Projects ☐
- Jettys ☒
- Kilns ☒
- Laboratories ☒
- Levees ☒
- Libraries ☒
- Manholes ☒
- Marinas ☒
- Mine Loading and Unloading Stations ☒
- Missile Facilities ☒
- Mausoleums ☒
- Motels ☒
- Museums ☒
- Oil Refineries ☒
- Parks ☒
- Parking Lots ☒
- Piers ☒
- Pilot Plants ☒
- Pipelines ☐
- Pumping Stations ☒
- Radio Transmitting Towers ☒
- Railroad Roadbeds ☐
- Railroad Structures ☒
- Rapid Transit Structures ☒
- Refineries ☒
- Reservoirs ☒
- Roads ☒
- Rolling Mills ☒
- Recreational Buildings ☒
- Residence ☒
  - Single Family ☒
  - Multi-Family ☒
- Restaurants ☒
- Sewers ☒
- Sewage Plants ☒
- Shopping Centers ☒
- Silos ☒
- Stadia ☐
- Stores ☒
- Subways ☒
- Swimming Pools ☒
- Television Transmitting Towers ☒
- Telephone Transmission Lines ☒
- Transportation Terminals ☒
- Tunnels ☒
- Viaducts ☒
- Waste Disposal Plants ☒
- Waterways ☒
- Wharfs ☒
- Retaining Walls ☒
- Sidewalks ☒
- Storage Tanks ☐
- Structural Steel Framework ☐
- Scaffolds ☒
- Service Stations ☒
- Windmills ☒
- Other (specify) ☐

Systems:

- Air Conditioning ☐
- Heating ☐

- Piping:
  - Water ☐
  - Air ☐
  - Gas ☐
  - Steam ☐
  - Acid ☐
  - Circulating ☐
  - Cooling ☐
- Plumbing ☐
- Refrigeration ☐
- Sprinkler ☐
- Steam ☐
- Ventilating ☐

MACHINES, TOOLS, EQUIPMENT, AND WORK AIDS

Record an "X" to indicate machines, tools, equipment, and work aids used.

- Construction Machines and Equipment:
  - Canal construction machines:
    - Concrete joint machine ☐
    - Canal liner machine ☐
    - Canal trimmer machine ☐
  - Earth compacting machines:
    - Hydra hammer aero stamper ☐
    - Roller compactor ☐
    - Road pactor ☐
    - Form tamper ☐
    - Blob compactor ☐
    - Tamping machine ☐
  - Earth moving equipment:
    - Backhoe ☐
    - Loader ☐
    - Power shovel:
      - Backhoe shovel ☐
      - Dragline shovel ☐
      - Clamshell shoveler ☐
    - Highline cable equipment ☐
    - Remote control earthmover ☐
    - Trencher ☐
    - Skiploader ☐
  - Earth grading machines:
    - Push-pull scraper ☐
    - Selfloading scraper ☐
    - Motor grader ☐
    - Bulldozer ☐
    - Tractor loader ☐
    - Auto grader ☐
  - Excavating machines:
    - Mass excavator ☐
    - Wheel excavator ☐
    - Tower excavator ☐
  - Paving machines and equipment:
    - Asphalt berm curber ☐
    - Asphalt paver ☐
    - Asphalt roller ☐
    - Asphalt screeder ☐
    - Asphalt spreader ☐
    - Asphalt heater and planer ☐
    - Concrete berm curber ☐
    - Concrete curer ☐
    - Concrete lift slab ☐
    - Concrete planer ☐
    - Concrete spreader ☐
    - Concrete mechanical finisher ☐
    - Concrete mobile form traveler ☐
    - Concrete slip form hydraulic equipment ☐
  - Pavement breaker ☐
  - Pipeline construction machines:
    - Cast-in-place pipelayer ☐
    - Pipemobile ☐
    - Pipe wrapper, cleaner, bender ☐
    - Tar pipelining machine ☐
  - Piledriver:
    - Floating piledriver ☐
    - Mobile piledriver ☐
  - Tunnel construction machines:
    - Tunnel boring machine ☐
    - Tunnel heading shield machine ☐
    - Tunnel mucking machine ☐
    - Tunnel mole boring machine ☐
  - Mixing machines:
    - Concrete mixer ☐
    - Concrete batch plant ☐
    - Concrete dual drum mixer ☐
    - Concrete gun mixing machine ☐
  - Pumping equipment:
    - Cement pump ☐
    - Concrete gun pump ☐
    - Concrete pumping machine:
      - Mobile concrete pumping machine ☐
  - Drilling machines:
    - Well drilling machines:
      - Cable tool ☐
      - Rotary Tool ☐
    - Water well drilling machines ☐
  - Dredges ☐
    - Clamshell dredges ☐
    - Pump dredges ☐
  - Hoisting equipment:
    - Truck crane:
      - Long boom truck crane ☐
    - Tower crane ☐

- Elevator ☐
- Cherry picker ☐
- Chicago boom hoist ☐
- Mobile lift hoist ☐
- Stiff leg hoist ☐
- Tugger hoist ☐

Tools:

- Handtools ☒
  - Drills ☒
  - Chisels ☒
  - Files ☒
  - Knives ☒
  - Rules ☒
  - Scissors ☒
  - Tape Measures ☒
  - Scribers ☒
  - Wire Cutters ☒
  - Levels ☒
  - Mauls ☒
  - Mallets ☒
  - Screwdrivers ☒
  - Brushes ☒
  - Wrenches ☒
  - Clippers ☒
  - Needle ☒
  - Square ☒
  - Trowels ☐
  - Sawing Palms ☐
  - Hammers ☒
  - Saws ☒
  - Brick Hammers ☐
  - Jointers ☒
  - Brick Cutting Chisels ☐
  - Planes ☒
  - Straight Edge ☒
  - Floats ☐
  - Whips ☐
  - Darbies ☐
  - Finishing Trowel ☐
  - Pry Bars ☒
  - Shears ☒
  - Serrated Trowels ☐
  - Floor Rollers ☒
  - Putty Knives ☒
  - Hacksaws ☒
  - Bolt Cutters ☒
  - Punches ☒
  - Hatchets ☒
  - Staplers ☒
  - Pincers ☒
  - Scrapers ☒
  - Paint Rollers ☐
  - Wallpaper Rollers ☐
  - Reamers ☐
  - Brace and Bits ☒
  - Pipe Threaders and Dies ☐
  - Pipe Benders ☐
  - Roofting Knives ☐
  - Linoleum Knives ☐
  - Mops ☐
  - Crowbar ☒
  - Pointing Trowel ☐
  - Stone Masons Hammer ☐
  - Other (specify) ☐

Power Handtools:

- Rivet Guns ☐
- Power Drills ☒
- Power Actuated Fastening Devices ☒
- Spray Gun ☐
- Calking Guns ☒
- Grouting Guns ☒
- Gunite Guns ☐
- Cement Guns ☐
- Power Saws ☒
- Pneumatic Drills ☒
- Pneumatic Hammers ☒
- Other (specify) ☐

Equipment:

- Soldering equipment ☐
- Brazing equipment ☐
- Welding equipment ☒
- Tar Kettles ☐
- Lead Pots ☐
- Blow Torches ☐
- Stud Welding Guns ☒
- Other (specify) ☐

Work Aids:

- Blueprints ☒
- Sketches ☒
- Building Plans ☒
- Architects Drawings ☒
- Bills of Materials ☒
- Work Order Specifications ☒
- Structural Specifications ☒
- Construction Plans ☒
- Contract Specifications ☒
- Compasses ☒
- Chalk ☒
- Plumb bob ☒
- Crayons ☐
- Grading Stakes ☐
- Plumb line ☒
- Transit ☒

ENVIRONMENTAL SETTING

Record an "X" after each item to indicate where the work is performed.

Agriculture	☐	Financial	☐
Commercial:		Government Service	☐
Business Service	☐	Industrial	☐
Food and Beverage	☐	Insurance	☐
Lodging Service	☐	Legal	☐
Personal Service	☐	Library	☐
Printing and Publishing	☐	Medical Service	☐
Repair Service	☐	Military	☐
Sales	☐	Nonprofit	☐
Communications	☐	Office Service	☐
Conservation	☐	Recreation	☐
Construction	☒	Social Service	☐
Correctional	☐	Subsurface and Space	☐
Educational	☐	Transportation	☐
Entertainment	☐	Utilities	☐
Exhibition Center	☐	Other (specify)	☐

LIST OF INVENTORIES INCLUDED IN SERIES I

Administrative and Management Occupations
Agriculture and Related Work
Air Transportation and Related Occupations
Architectural, Engineering, and Related Occupations
Clerical and Related Occupations
Counseling, Guidance, Social Services, and Related Work
Fine Arts Occupations
Inspection, Testing, and Related Work
Mathematics, Physical Sciences, and Related Work
Mechanical Repairing and Related Work
Medical and Health Services Occupations
Merchandising and Related Occupations
Motor Transportation and Related Work
Performing Arts Occupations
Photography, Communications, and Related Work
Physical Science Research
Pipeline Transportation and Related Work
Psychological Research and Related Work
Public Utilities and Related Work
Railroad Transportation and Related Work
Water Transportation and Related Work
Writing, Editing, and Related Work

*U.S. GOVERNMENT PRINTING OFFICE : 1980 0-302-702

☆ U.S. GOVERNMENT PRINTING OFFICE: 1980 0—302-702